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ABSTRACT

This guide provides citations and abstracts for 250 energy-related resources which can be used to incorporate energy education into the structure of existing college courses. In addition to citing books, articles, unpublished papers, films, and videotapes, the resource guide cites sets of class notes and course outlines that have been filed with Florida's Energy Office. Each of the numbered entries provides, where applicable, title, author, publisher, date of publication, and a brief, critical abstract. Use of this guide is facilitated by a subject index which arranges entries under four general topics: (1) Energy Supply (subheadings within this category are oil, gas, coal, synfuels, nuclear energy, solar energy, wind, biomass, and miscellaneous energy forms): (2) Energy Consumption (subheadings here are transportation, heating and cooling, and lighting): (3) Energy Impact (subheadings here are environmental, social, and economic impacts); and (4) Conservation (subheadings here are conservation opportunities, obstacles, and technology). Further access to the resource guide is provided by two additional indexes. One arranges the materials in terms of their applicability to each of 134 courses identified using the State of Florida Common Course Numbering System for colleges and universities. The second offers access by publisher or author. (JP)

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Abstracts of Energy Education Materials for College Classes

prepared by the
1980 Energy Education Project
Roger A. Messenger, Project Director
for the
Governor's Energy Office
Tallahassee, Florida

October 1980

JC 810 084

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ABSTRACTS OF ENERGY MATERIALS
FOR COLLEGE CLASSES

Preface

The amount of attention given to energy issues in recent years has generated a great volume of literature, more than can be assimilated by even the most dedicated reader. Traditional abstract services have surveyed portions of the energy field relevant to their areas of focus, and more comprehensive energy abstract services have been developed for the use of energy specialists. This publication is intended to serve the needs of one important group - college teachers and university professors who are interested in including energy issues in the structure of existing courses.

Fifteen faculty, representing a number of academic disciplines, surveyed current literature on energy and identified materials that have particular merit for use in college courses. Most of the materials are readily accessible through campus libraries. The materials chosen for recommended reading include books and articles of varying length and level of difficulty. The instructor should therefore be able to find, through the index, material to suit a particular objective.

Sets of class notes and course outlines that have been filed with the Governor's Energy Office are so indicated in the abstracts. Films and videotapes are included in the catalogue and may be ordered from the sources noted.

The subject focus index identifies resource material in 18 key topics. The listings in these topic areas is not comprehensive but rather is a starting point for an exploration of the literature. The index of applicable courses is indicative of how the material can be used. The greatest amount of attention was given to identifying materials for courses with high enrollment because the goal is to have the largest possible number of post-secondary students examine energy issues in depth. The project team invites users of this publication to participate in this effort.

ROGER A. MESSENGER, Ph.D., P.E.
Project Director

Introduction

There are several ways you can use this catalogue of abstracts to survey energy materials rapidly for their relevance to courses you teach.

The SUBJECT FOCUS INDEX on pp. 45-46 lists abstracts in eighteen categories under four general headings: Energy Supply, Energy Consumption, Energy Impact, and Conservation. These headings are further divided into subject areas such as oil, coal, biomass, etc. There are, for instance, 25 listings on synfuels under the topic of Energy Supply, and 42 on transportation under the topic of Energy Consumption. If you wish to investigate these areas in your class, the abstracts indicated may be appropriate for you.

The COMMON COURSE INDEX on pp. 47-51 lists abstracts of materials that have been identified as being relevant to particular courses. The index is keyed to the State of Florida Common Course numbering system for colleges and universities. You may find one of the courses you teach listed here or you may find some other closely related courses.

The BIBLIOGRAPHICAL INDEX lists all the abstracts by author or publisher. If you wish to look up the abstract of a particular reference, you will find the abstract number included with the bibliographic listing.

ABSTRACTS OF ENERGY MATERIALS FOR COLLEGE CLASSES

301 STRIP MINING: ENERGY, ENVIRONMENT, AND ECONOMICS

Appalshop Films, 1979

This fifty-minute color film documents the history of strip mining coal in Appalachia. It displays through interviews and vignettes involving mine operators, mine workers, environmental advocates, government officials, and representatives of other segments of the community the various facets and trade-offs and perspectives concerned with this coal production technique.

302 ENERGY: GLOBAL PROSPECTS 1985-2000

Workshop on Alternative Energy Strategies
New York: McGraw-Hill, 1977

This work assesses policy alternatives and probable consequences for the future and distinguishes problems and prospects of advanced industrialized nations from those of the Third World. It insists on the need for conservation in developed societies and the need to resort to unconventional energy sources in both developed and developing nations.

303 DAYDREAMS AND NIGHTMARES: A SOCIOLOGICAL ESSAY ON THE AMERICAN ENVIRONMENT

William R. Burch, Jr.
New York: Harper and Row, 1971

Many of the "facts" of this book are now seriously outdated but the interpretations remain highly germaine. The book has the stature of a classic in the field. It surveys the social scene of the U.S.A., exploring such facets of personality as religious faith, life cycle roles, and community identity -- and such social system factors as class relations and bureaucratic organization. These are used to explain why typical American attitudes favor plundering the environment and wasting resources -- why energy is considered "free and inexhaustible."

304 ENERGY ENVIRONMENT SOURCE BOOK

John M. Fowler
NSTA, 1978

This work was created especially as a classroom guide for teachers at the high-school level, but it is equally useful for college instructors who lack special expertise in energy topics. It provides a quick resource for facts, terms, concepts, and problems across all aspects of the energy field. An extensive bibliography of nontechnical materials is referenced and cross-indexed by topic for those who wish further details. Modest "helpful hints" for the instructor -- lecture outlines, topics for discussion, etc. are also included.

305 THE ECONOMICS OF ENERGY

Michael G. Webb and M.J. Ricketts
New York: Wiley, 1980

This general reference work covers topics suggested by the title: principles of energy production and consumption, sector mix and systems. It is primarily concerned with intranational analysis, but international trade receives some consideration. The major focus is on the U.S. and Western Europe.

306 MOTIVATING THE TROOPS FOR THE ENERGY WAR

John Darley, Clive Seligman, Lawrence Becker, Paul Stern, Jan Hamrin, B.F. Skinner, and Daniel Yergin
Psychology Today, April 1979, 14-33.

This series of four articles offers insights and generalizations that address the problem of inducing consumers to make energy judgments that account for social consequences. Most of the material is routine and basic but some counter-intuitive principles are developed; e.g., scarcity, rationing, higher pricing, and conservation appeals may make heavy consumption psychologically more attractive.

Technological fixes may discourage conserving behavior. Attitudes unrelated to energy implications may powerfully influence consuming behavior.

307 ENERGY DECISION SIMULATION GAMES AS TERM PROJECTS
Benjamin L. Gorman
U. of Florida, 1980, 2 pp.
Available from Governor's Energy Office

This course module suggests that students may be assigned, in lieu of a term paper, the project of creating a game. It includes recommended assignments for students, a guide to background lecture material, standards and procedures for advising students and grading projects, and suggested (instructor) readings. Estimated time requirements: 20 hours of student time outside of class; two lecture hours in class; 15 minutes per student for instructor grading.

308 ENERGY CONTINGENCIES AND DECISION MAKING
Benjamin L. Gorman
U. of Florida, 1980, 4 pp.
Available from Governor's Energy Office

These lecture notes for a sociology class begin with the assumption that fossil fuels are limited and will be rapidly exhausted, that new technologies will not significantly alter these conditions -- and, therefore, that alterations in the social life of all the world's people are inevitable. There is discussion of conservation policy alternatives involving levels from household consumption to government and other major institutions, and distinguishes among goods and policies producing them which are individual in character vs. indivisible for larger social units. The conclusion is that force for change must come at the super-individual level.

309 MARGINS FOR SURVIVAL: OVERCOMING POLITICAL LIMITS IN STEERING TECHNOLOGY
E. Wenk, Jr.
U. of Washington. New York: Pergamon Press, 1979

Contemporary political mechanisms arrive at policy decisions almost exclusively in terms of the short-run consequences of the several alternatives available. Institutionally selected policies, especially governmental ones, are likely to have major negative longer range outcomes, with severe effects on quality of life. Population, environment, energy, and peace are the dimensions most implicated in these problems. The book analyzes political forces which create this nearsighted perspective, projects to the world-wide problems which are probable consequences, and describes means by which the citizenry can force or persuade politicians toward more effective policy selection.

310 MAGNIFICENT MYTH: PATTERNS OF CONTROL IN POST-INDUSTRIAL SOCIETY
A. Weiner
New York: Pergamon Press, 1978

This book begins with a brief argument that the world contains at present sufficient raw materials, energy sources, and technologies to provide adequate levels of living and social amenities for all the world's population. It continues, however, to suggest that rapid deterioration is likely because social and political innovation have not kept pace with scientific and technological innovation. New patterns of community living and institutional control are required and measures which will initiate this self-perpetuating innovation are prescribed.

311 ENERGY AND RESOURCE PROGRAMS - PART VII
Ernst W. Stromsdorfer and George Farkas, Editors
Evaluation Studies: Annual Review, Vol. 5, Beverly Hills: Sage Publications, 1980

Three excellent articles are presented on the application of quantitative social science technique in the assessment of success of policies and programs. One offers a general perspective on government energy regulations. The other two concern marketing of and demand for electricity: one focuses on time-of-day pricing, the other details the most informative study to date on variables influencing residential electric consumption. Other volumes in this same series also include articles of interest. (Title issued annually.)

312 ENERGY: THE NEXT TWENTY YEARS
Hans Landsberg, Editor
Cambridge, Mass.: Ballinger Press, 1979

This lengthy report, sponsored by the Ford Foundation comprehensively examines tradeoffs and cost-benefit options among various policies and various technologies and energy sources. The writers advocate deregulation of energy markets.

313 REGULATORY RATIONING OF ELECTRICITY UNDER A SUPPLY CURTAILMENT
Jan Paul Acton and Ragnhild Mowill
Land Economics, 52, Nov., 1976, 493-508

During the Arab Oil embargo of 1974, the city utilities of Los Angeles adopted customer use reduction quotas and a heavily penalizing surcharge (50% extra on all charges) for customers failing to keep consumption below the quota. The analysis of this case indicates that the policy was much more effective in achieving consumption reduction than market price increases, voluntary conservation, or other alternative policies. (The findings were striking for residential and commercial customers, but somewhat ambiguous for industrial customers.) Apart from the substantive findings, this article is a good case study in effective statistical controls to establish the validity of a quasi-experimental situation.

314 OBSTACLES TO ENVIRONMENTAL RESEARCH BY SCIENTISTS AND TECHNOLOGISTS: A SOCIAL STRUCTURAL ANALYSIS
Allan Schnaiberg
Social Problems, 24, June, 1977, 500-520

Government policy now requires a variety of impact analyses in advance of implementation of policies, construction of new productive facilities, etc. Such analyses are conducted by independent scientists with the intent of specifying the economic externalities, or costs and damages consequent to the innovation which are not directly charged to the institution or program creating it. Several factors in the structure of scientific and technological institutions are noted: scientific division of labor; differential access to data, communication, and publication; the distribution of power in the scientific community; economic sponsorship. These work together to make impact analysis inadequate and often inaccurate.

315 THE NATIONAL ENERGY CONSERVATION POLICY ACT: AN EVALUATION
Lee Schipper, et al.
Natural Resources Journal, 19, Oct., 1979, 765-785

This analysis of NECPA, section by section, is used as a vehicle for addressing the general adequacy of present and proposed national energy policy. It leans heavily on conservative economics assumptions that market pricing will accomplish the most desired results, but also indicates shortcomings and loopholes where such practice must be supplemented with political policy intervention; e.g., when all costs are included, fuel efficiency in automobiles makes very little difference in per mile cost to the operator, and greater efficiency may encourage more driving -- but from a societal perspective there is great prospect of saving in this sector. Some technical economics are included.

316 U.S. ENERGY DEMAND: SOME LOW ENERGY FUTURES
U.S. National Academy of Sciences, Committee on Nuclear and Alternative Energy Systems
Science, 200, April 14, 1978

A distinguished panel of scientists projects social and economic conditions of the future under varying assumptions of technological development, national policy, and price. The article suggests that radical price increases and stringent government conservation policies are required to reduce fossil fuel consumption. Massive investment in conservation-fostering equipment and developments is economically justifiable now, and is now essential. Even in the best scenario, total U.S. energy use will continue to increase, though it is possible to reduce long-term per capita consumption.

317 PUBLIC INTEREST LOBBIES: DECISION MAKING ON ENERGY

Andrew S. McFarland
Washington: American Enterprise Institute, 1976

This small volume suggests that citizen lobby groups are rising which will counterbalance the special interest lobbies of industry and credits this trend to such factors as increasing education of populace, improved communication, affluence, public alienation of trust in traditional institutions, and charismatic leadership (e.g. Ralph Nader). It argues that the level of success of early lobbying efforts and campaigns will determine the future growth in membership and activity of these organizations.

318 CONSTRUCTING A SOCIAL PROBLEM: THE PRESS AND THE ENVIRONMENT

A. Clay Schoenfeld, Robert F. Meier, and Robert J. Griffin
Social Problems, 27, Oct., 1979, 38-61

Social problems cannot be solved until they are recognized and defined by key institutions or population segments. The public at large develops a formulation of social problems primarily from the mass media. This analysis, considering macro-environmental issues including depletion of non-renewable energy sources, world interdependency, environmental tradeoffs, notes that the press is relatively late in recognizing problems and organizing thinking about them. The sequence began with interest-group entrepreneurs who mobilized pressure groups through unorganized individual communication, then government, then the mass media.

319 PUBLIC INTEREST LOBBIES: MEMBERSHIP AND INFLUENCE

James B. Kau and Paul H. Rubin
Public Choice, 34, 1979, 45-54

This work analyzes membership per capita in public interest lobbying associations (Common Cause, Public Citizen) by state, and voting records of Congressional representatives and concludes that representatives vote more favorably to conservation measures in cases where constituency has high percentage membership in associations presumed to pressure-lobby support for such actions. The relationship holds even after controlling for home-state factors such as citizen education level, party membership, presence of affected economic interest industry, etc. The article deals with other "public issues" which are not related to energy as well, but two of five issues analyzed have direct energy-conservation or environment-impact content. It suggests "prisoner's dilemma" or "free rider problem" may not apply in this case.

320 SUPPORT FOR RESOURCE CONSERVATION: A PREDICTION MODEL

Julie A. Honnold and Lynn D. Nelson
Social Problems, 27, Dec., 1979, 220-234

A survey tested respondent's responses to situations involving socially advantageous actions (e.g., driving at a lower speed to conserve gas vs. a higher speed and greater personal convenience), beliefs concerning the immediacy and severity of the energy crisis, and beliefs about the importance and efficacy of individual action in solutions. The results suggest that even high levels of belief in the severity of the problem do not lead to conserving behavior, because faith in efficacy of personal action helping is low and resistant to change. The authors conclude that "the internal logic of conservation may be self-defeating, and that.... support for voluntary resource conservation will probably not be extensive."

321 ENERGY ISSUES AS AN ASPECT OF LIVING IN THE WORLD

C.W. Swain, Editor
Energy Ethics and Values Task Force:
Unit I, Florida State University, 1980, 4 pp.
Available from Governor's Energy Office.

This work explains the concept of a world view and shows sources of the view that the world exists for the sake of humans. It contrasts this world view with other concepts of the place of humans in nature and indicates the importance of a world view for moral choices, including decisions regarding energy. Also included are: suggested activities, discussion questions, and a bibliography.

322 JUSTICE AND EQUITY AS DIMENSIONS OF THE ENERGY CRISIS
C.W. Swain, Editor
Energy Ethics and Values Task Force: Unit II, Florida State University, 1980, 5 pp.
Available from Governor's Energy Office.

This explains how economic growth has enabled neglect of questions of economic justice. The energy shortage and limited resources require attention to difficult ethical questions, such as just distribution of wealth, foreign aid and other global issues, technology, and political structures. Discussion questions and a bibliography are included.

323 THE ENERGY CRISIS, STANDARDS OF LIVING AND QUALITY OF LIFE
C.W. Swain, Editor
Energy Ethics and Values Task Force: Unit III, Florida State University, 1980, 5 pp.
Available from Governor's Energy Office.

The effects of energy shortages on the standard of living and quality of life are presented, as well as prospects for "high culture" in face of a low energy supply. Also: suggested activities, discussion questions and a bibliography.

324 SELECTED BIBLIOGRAPHY
Energy Ethics and Values Task Force
5 pp.

This listing cites books and articles on cultural, ethical, political, technological, and historical aspects of energy.

325 STANDARD OF LIVING AND QUALITY OF LIFE
Rod Allen
Energy Ethics and Values Task Force: Study Paper, Florida State University, 1980, 3 pp.
Available from Governor's Energy Office.

The concepts of standard of living, focusing on material goods and services, are contrasted with less quantifiable concepts relating to quality of life. Energy consumption patterns are considered. The study paper contains a bibliography and student activities.

326 LIVING IN THE WORLD
C.W. Swain, Editor
Energy Ethics and Values Task Force: Study Paper, Florida State University, 1980, 2 pp.

In this work, the nature and origins of the view of the world as existing for human use are analyzed. Problems with this view and alternative views are discussed.

327 MAN-IN-NATURE
Don E. Marietta, Jr.
Energy Ethics and Values Task Force: Study Paper, Florida Atlantic University, 1980, 3 pp.
Available from Governor's Energy Office.

The concept of the human person as part of nature is contrasted with the view of humans as over against nature. The meaning and implications of bio-spheric interdependence are presented. Some discussion questions and a bibliography are also included.

328 THE RHETORIC OF THE ENERGY DEBATE
Jerry M. Chance
Energy Ethics and Values Task Force: Study Paper, Florida A&M University, 1980, 10 pp.
Available from Governor's Energy Office.

This paper points out emotional appeals, slanted language, suppressed evidence, and fallacious reasoning in the energy debate. It shows how attention to logic and conditions of reasonableness can clarify issues and suggests specific assignments. Exercises for analysis are given.

329 DIVIDING THE PIE
Don E. Marietta, Jr.
Energy Ethics and Values Task Force: Study Paper, Florida Atlantic University, 1980, 3 pp.
Available from Governor's Energy Office.

The goods created by the use of fossil fuel energy have not been justly divided up, because the "economic pie" kept growing, with some rewards for almost everyone. With energy supplies dwindling, attention must be given to justice and to economic approaches which are less exploitive of persons and nature. Discussion questions and a bibliography are included.

330 PROGRESS AND TECHNOLOGY
Thomas Simon
Energy Ethics and Values Task Force: Study Paper, University of Florida, 1980, 2 pp.
Available from Governor's Energy Office.

The role of technology and technical experts in society and the concept of progress are reviewed in this paper. Discussion questions and a bibliography are included.

331 ENVIRONMENTAL ETHICS
Thomas Simon
Energy Ethics and Values Task Force:
Study Paper, University of Florida, 1980, 2 pp.
Available from Governor's Energy Office.

This paper studies the sorts of questions treated in environmental ethics. Professional, governmental, and personal involvement in ethics of energy issues and ethnical implications of methods and attitudes in approaches to energy are discussed. Discussion questions and a bibliography are included.

332 THE FALLACY OF THE ENERGY-CIVILIZATION EQUATION
George Basalla
New Republic, 181(12), Sept. 22, 1979.

The thesis is made that there is no positive correlation between energy consumption and high cultural achievements. In a historical overview of the origin of the energy-civilization formula, it is admitted that there is a connection between energy availability and the attainment of creature comforts -- nutrition, full life expectancy, transportation, etc. -- but it is shown that cultural greatness was achieved by civilizations with relatively small energy use.

333 POLITICAL ECOLOGY
Thomas Simon
Energy Ethics and Values Task Force: Study Paper, University of Florida, 1980, 3 pp.
Available from Governor's Energy Office.

The political implications of the choice of energy sources, especially between centralist and decentralist political/social/economic structures are analyzed. Included: discussion questions, bibliography.

334 TEACHING DYNAMIC FEEDBACK SYSTEMS THINKING: AN ELEMENTARY VIEW
Nancy Roberts
Management Science, 24(8), April, 1978

Methods of teaching systems theory (dynamic feedback systems, causal loop diagrams) in elementary grades and some methods useful in introducing subject to high school and college students are provided in this article.

335 THE HUMANIST MAGAZINE
Lloyd Morain, G.E. Calvin, Bryn Beorse, others
July/August issue, 1979

This magazine was a special issue on alternative energy sources. Alternative energy up-dates have been published in 1980 issues.

336 ENERGY AND ENVIRONMENT - 2nd EDITION
G. Tyler Miller
Belmont, Calif.: Wadsworth Publishing Co., 1980, 162 pp.

This textbook contains ten chapters on energy crisis, laws of energy, ecology, energy options and sources, climate, energy planning and action. An extensive bibliography of more than 1200 listings is included.

337 GOOD WORK
E.F. Shumacher (with Peter N. Gillingham)
Harper Colophon Books, 1980, 223 pp.

This collection of papers by Shumacher addresses human-scale technology and appropriate forms of ownership and economic management. A chapter by Gillingham on the meta-economy cites activities now in or non-renewable fuels. Searching questions are raised about the possibility of "high culture" for large populations in a "low energy" future. A bibliography is included.

344 WALDEN
Henry David Thoreau
Anthology of American Literature, Vol. 1, Geo. McMichael, ed. New York: Macmillan, 1974. Also in Modern Library edition et al.

Thoreau's famous extolling of "life in the woods" is both an anti-growth statement and a philosophical remedy for urban/"civilized" malaise. Its first chapter, "Economy," is famous for its assertion of a primitive, spare life over one of relative luxury and profligacy. Other chapters, particularly "Where I Lived and What I Lived For," while iterating the frugality of "Economy" in such statements as "A man is rich in proportion to the number of things which he can afford to let alone," also trace the spiritual relation between man and his environment and thus with his God. "Sounds" pictures the intrusion of civilization on the innocence of Walden Pond.

345 THE EDUCATION OF HENRY ADAMS
Henry Adams
Boston: Houghton Mifflin Co., 1961

This famous autobiography (written oddly, in third person) develops the idea that an Adams of Boston, descended from the Samuel and two John Adamses who were so influential in creating our country out of a colony, and educated with the best of what we would call a humanities education, finds himself at a loss to cope with the dynamo, symbol of oncoming 20th century prograss. Adams discovers he is an anomaly as he views the Chicago Exposition of 1893 and the point is driven home to him at the Great Exposition of 1900 in New York. In Chapter 25 he compares the culture of the Dynamo, symbol of multiplicity and "infinite costly energy within a generation," with that of the Virgin, 13th century symbol of unity over chaos. It precurses our present sense of anomaly.

346 SOFT ENERGY PATHS
Amory B. Lovins
1978

This book has three parts: Concepts, Numbers, and Toward a Durable Peace. Part I: a reworking of "The Road Not Taken" article (Foreign Affairs, Oct. 1976) expands on "soft path" energy sources like solar, wind, geothermal, and conservation. Part II: Explains how energy input should be matched to end use, after showing how it is not so matched now. Part III: Largely an anti-nuclear power/proliferation plea. It traces atomic power policy from the Acheson/Lilienthal/Baruch proposals to Eisenhower's "Atoms for Peace" plan and returns full circle to proposals suggested by President Ford in '76. Reasonable tone and reliable statistical methods make this book a powerful influence for conservation that is not curtailment only and for a world no longer threatened by nuclear proliferation.

347 THE ROAD NOT TAKEN
Amory B. Lovins
Foreign Affairs, October, 1976.

This classic article contains a warning for the United States particularly that the energy shortage is real and imminent. It analyzes our use of energy at its end point, shows by statistics how changing sources will affect duration of certain supplies (oil, coal particularly), and extols "soft" energy technologies. The article has ten parts: I. Introduction; II: Scenario 2000 A.D.; III: Flaws in scenario (flaws of slowness, shortages, costs); IV: Alternative to growth economy (technical fixes, social changes like carpooling, smaller cars, warmer clothes, mass transit, open windows); V: Explanation of soft technologies, including scaling down; VI: Differences in hard and soft technologies, their risks and costs; VII: Transitional technologies; VIII: International consequences; IX: Sociopolitical impact; X: Conclusion.

progress and offers practical suggestions for individuals and groups.

338 MUDDLING TOWARD FRUGALITY: A BLUEPRINT FOR SURVIVAL IN THE 1980'S
Warren Johnson
Boulder, Col.: Shambhala Publications, Inc., 1979, 252 pp.

This book proposes incremental movement toward a frugal, decentralized, human-scale society as the safest and most plausible response to energy and resource scarcity.

339 CULTURAL ASSUMPTIONS ABOUT ENERGY FUTURES
Dr. Arthur Harkins
University of Minnesota, May 15-16, 1980

This is a speech delivered at the "Faculty Symposium on Energy Issues for College Courses," May 15-16, 1980, Orlando, Florida, co-sponsored by Governor's Energy Office and Office of the Chancellor and Division of Continuing Education, Florida Atlantic University. The speech developed the thesis that the "energy crisis" mentality has contributed to a pervasive negativism and argues that no conflict exists between growth and environmental concerns. A large variety of public speaking elements is clearly illustrated. It is useful for examining structure and support for an argument and suggests the "rhetoric of negativism" as a project for rhetorical criticism.

340 ENERGY - YESTERDAY, TODAY AND TOMORROW
Videotape of Ralph L. Lewis
Gulf Oil Corporation, 1980
Available from Governor's Energy Office.

This is a speech delivered at the Faculty Symposium on Energy Issues for College Courses, May 15-16, 1980, in Orlando, Florida. The speech argues that certain United States Government regulations and policies restrict the ability of oil companies to engage in competitive world markets and thus eliminate shortages of energy. Useful illustration of argument and use of visual aids. The speaker uses a very soft-sell delivery mode.

341 SOLAR WATER HEATERS: WHAT THEY CAN COST, WHAT THEY CAN SAVE
Consumer Reports, 45(5), May 1980, 322-327

Focusing on solar water-heating systems installed in existing houses, the report offers a documented discussion of what a homeowner might expect from a solar water heater. After a brief, general discussion of solar water heating, five brand-name systems are compared for ease of installation, upkeep, costs, and savings. A worksheet provided includes specific directions for calculating costs and savings to decide if solar hot water would be a worthwhile investment for individuals in specific climates and circumstances. Conventional energy saving measures (i.e., lowering thermostat setting, insulating the tank, and using flow restrictors) are briefly discussed and compared to the solar heating alternative.

342 FUTURE PROSPECTS FOR GEOTHERMAL ENERGY
H. C. H. Armstead
Physics in Technology, 11(1), January, 1980
2-7

A somewhat technical article arguing that nuclear fusion and geothermal energy will eventually be the primary energy resources and that if we fail to master nuclear fusion, geothermal energy will reign. After a brief discussion of hyperthermal fields, semi-thermal fields, and deep aquifers in 'non-thermal' areas, the author explains rock-fracturing, deep heat mining, and recovering heat from the earth's crust. An interesting, brief, and direct discussion of the prospects and possible problems affecting the future of geothermal energy.

343 PERSPECTIVES ON LOW ENERGY-HIGH CULTURE MOMENTS IN HUMAN HISTORY
Robert G. Flick
Energy Ethics and Values Task Force:
Study Paper, University of Central Florida, 1980, 5 pp.

The paper examines the concept of "high culture" and notes that it has always required a surplus of energy beyond that needed to sustain life. This energy often came from the exploitation of slaves, of the poor,

348 HUMAN SCALE
Kirkpatrick Sale
New York: Coward, McCann and Geoghegan
1980

Implies or describes throughout how smaller systems are better not only psychologically but also tangibly -- they save energy, money, time, and sanity. Describes deficiences and difficulties of bigness, prescribes smallness, but makes no attempt to tell how to get small. Covers wide range of subjects from aesthetic aspects of human scale in our buildings, cities, and automotive designs to the social and economic malfunctions brought on, according to Sale, by largeness of scale. The chapter on energy recapitulates many of the arguments of scientists and technicians that smaller scale generators, distributing centers, and manufacturers of various kinds of energy would be more efficient and reliable. There are gaps in the logic of the argument but Sale's argument is germane to our energy concerns.

349 WORLD ENERGY STRATEGIES
Amory B. Lovins
Friends of the Earth International,
Cambridge, Mass.: Ballinger Pub., 1975

Lovins explores the question of constraints of resources and time put upon us not only by physical scarcity but also by geopolitical, environmental, and socio-technical problems. He emphasizes not money cost but energy cost of oil and other fossil fuels like natural gas, coal, tar sands, and shale, and nonfossil-fuel options like nuclear fusion and geothermal heat. He discusses the advantages and technologies of spending energy income over spending the energy capital of fossil fuels. He stresses not the curtailment often envisioned as conservation but the wise process of forecasting and planning according to ethics of future risk problems and political imagination.

350 THE CLOSED FRONTIER
Harold Simonson

Since people still accept the American Dream of wide-open opportunities (as symbolized in an open frontier) the author says that our society has failed to come of age in the sense of accepting closed opportunity. To accept ourselves as we are does not mean we have to accept the rule of determinism as the defeat of tragedy. Study of Twain, Rolvaag, and Nathaniel West as writers of tragedy and thus of the failed American Dream suggests our limitations as people able to cope within confinement.

351 THE LEADER OF THE PEOPLE
John Steinbeck
1945

The grandfather of a family living in Salinas, California, fascinates his grandson with his tales of "westering," that is, fighting Indians and overcoming other hardships in leading life to the ocean's boundary of the American frontier. The adult family members find Grandfather's stories boring, and the interweaving of emotions between the father, mother, hired man, and young son makes for a poignant situation as Grandfather comes to recognize his effect on the others. Jody, the grandson, is the only family member who thrills to the old stories. The others are impatient with them because they work within the framework of the present. The story makes clear the limitations of this country's land, and, by implication, other resources, in line with Frederick Jackson Turner's thesis that the closing of the frontier meant a closing of the "safety valve" it offered society.

352 ENERGY INFORMATION DATA BASES
Dept. of Energy Technical Information
Center, Feb., 1979

Current materials on all scientific and technical areas of energy are compiled in comprehensive data bases. Products available include: 1) recurring publications, 2) magnetic tapes, and 3) bibliographies. Abstracts of the materials may be obtained from the Center in Oak Ridge, Tennessee, via more than 200 on-line terminals nationwide. A bibliography is used which lists resources used in the creation of TIC's data bases.

353 27 ENERGY FILMS -- 16mm COLOR
U.S. DOE, Office of Public Affairs,
Washington, D.C. 20545, 1978

This is a partial listing of 27 energy-related films. Topics include: Conservation, Fusion, Geothermal, Nuclear, Solar, Transportation, etc. Order form attached. Available of free loan from: Energy Film Library, DOE Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830. Available for purchase from: National Audiovisual Center, National Archives and Records Service, General Services Administration, Order Section FF, Washington, D.C. 20409.

354 FOSSIL ENERGY ADVANCED RESEARCH SPEAKER PROGRAM - 1979-80
Oak Ridge Associated Universities
1980

This work lists persons available across the country to speak on topics related to fossil energy. The purpose of the program itself is to encourage interaction between researchers and facilities, and to acquaint universities with the field in order to establish fossil energy programs.

355 STATEWIDE PUBLIC AGENCY SOURCES OF ENERGY - RELATED PUBLICATIONS
State Energy Office
301 Bryant Bldg., Tallahassee, FL, 32301, June, 1979

This quick reference to public agency sources which serve the entire State provides materials which respond to questions on energy-related matters. It includes: 1) subject list of handout publications available on State and County level, 2) list of State Energy Office documents and studies, and 3) list of films available from State and Regional Energy Centers.

356 ENERGY FILMS INTERIM CATALOG - 16mm - FREE LOAN
U.S. DOE, Washington, D.C. 20545, 1978

This catalog of 92 films under 58 subjects is available through the DOE Film Library, Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830. The catalog lists the films according to subject, titles, types, and descriptions. A list of sales sources is included along with request forms.

357 ANALYZING SYMBOLIC DIMENSIONS OF TECHNOLOGICAL DISPUTES: THE MICHIGAN CONTAINER CONTROVERSY
Robert E. Snow and David E. Wright
Science, Technology, & Human Values, 29, Fall, 1979

The authors contend that technological disputes are not resolved simply on the basis of empirical evidence alone. Their thesis is that such disputes, particularly when they rise to the level of public political controversy, tend to be assessed in the light of personal ideologies, images of the "good life," value perspectives, and even cultural/cosmic myths. Using a case study of the 1976 Michigan controversy over regulation of throwaway beverage bottles, the authors conclude that "individuals or groups committed to conflicting cultural myths (industrial progress vs. the agrarian utopia) are unlikely to agree on, for example, the appropriate role of nuclear power or synfuels in America's energy future," scientific evidence notwithstanding.

358 BENEFIT-COST ANALYSIS, FUTURE GENERATIONS AND ENERGY POLICY: A SURVEY OF THE MORAL ISSUES
Douglas MacLean
Science, Technology, & Human Values, 5(31), Spring, 1980

Although slightly obscure in places, this article raises a profoundly important moral issue, that of determining the nature and extent of our obligation to future generations. According to prevailing economic systems based on industrial and technological growth, the needs of the contemporary poor can be met only through a continued consumption of world energy sources. Yet, such a course of action would infringe upon the rights and welfare of future generations through their inheritance of a depleted environment. Several conventional ethical models are analyzed in terms of their usefulness in establishing "intergenerational equity." He concludes that no avoidance of the lifeboat dilemma is possible short of structural changes in the current economic and political systems.

359 IDEOLOGY AS STRATEGY: THE DISCOURSE OF THE ANTI-NUCLEAR MOVEMENT IN FRANCE AND GERMANY
Dorothy Nelkin and Michael Pollack
Science, Technology, & Human Values, 5(30)
Winter, 1980

This article examines the language, rhetoric, images, metaphors, and ideologies of the anti-nuclear movement in France and Germany. They show how anti-nuclear rhetoric has evolved from an initial focus on the risks of nuclear technology and its relation to a future ecological crisis to the development of a cultural and social ideology and worldview in which opposition to nuclear power comes to represent not just a response to an immediate technological choice but an apocalyptic struggle for human survival and political justice.

360 LET'S ALL PLAY ENERGY POLICY
Hans H. Landsberg
Daedalus, 109(3), Summer, 1980

This article treats the conflicting purposes and countervailing interests of pressure groups as being the major obstacle to the development concensus-based energy policy. Although advocating a growth policy, the author distances himself from the hard- and softline approaches. He contends that through a lowering of ideological tempers, the willingness on the part of special interest groups to moderate demands that their entire agendas be adopted, and through traditional "log-rolling" politics a workable solution can be found.

361 LOCAL GOVERNMENT ENERGY ACTIVITIES: VOL. 3 - CASE STUDIES OF TWELVE CITIES AND COUNTIES
U.S. DOE, Division of Environmental and Institutional Impacts Evaluation,
July, 1979

This volume is one of three in a series. The other two volumes include a summary analysis and a detailed analysis of the data contained in the case studies. This volume describes the problems, goals, organization and results of local governmental policy making in twelve places: Boston, Pittsburg, Allegheny County, Metro-Dade County, the City of Los Angeles, Los Angeles County, Oakland, Alameda County, Seattle, King County, Minneapolis, and Hennepin County.

362 EFFICIENT USE OF ENERGY REVISITED
Marc Ross
Physics Today, Feb., 1980, 24-31

Since an effective "supply strategy" will be several decades in the making, it is essential that an "efficiency strategy" be pursued in the meantime. Aspects of the technological potential for improving energy efficiency are discussed with reference to buildings, automobiles, and manufacturing. Greater governmental support is needed for applied research, especially for industrial productivity, the author claims. He also discusses several economic models for estimating energy efficiency and projected levels of fuel consumption. He assesses the value of various types of governmental regulations and incentives. He concludes that cost-effective improvements in efficiency by factors of 2, 3, or 4 can be achieved rapidly, i.e. over the next few decades, resulting in the elimination of energy from the list of the nation's problems.

363 THE TECHNOLOGICAL SOCIETY
Jacques Ellul
New York: Knopf, 1964

This book, titled La Technique in the original French edition, is a thoroughgoing sociological and cultural analysis of technicism as the most fundamental feature of modern civilization. Guided by the principles of efficiency, standardization, and rationalization, technique (not simply machine technology) has been extended to all spheres of life--economics, politics, leisure, and social pursuits--and represents a preoccupation with means rather than with ends. Intrinsic values and ethically determined goals wither in the ascendancy of exclusively instrumental concerns. Technicism is an inevitable and irreversible force, operating impersonally and without plan or design. Countervailing forces have generally been co-opted, and the prognosis for advanced societies is dire.

364 LIMITS TO ALTRUISM
Garrett Hardin
Bloomington, Indiana: University Press, 1977

Belonging to the genre of socio/biology, this book--journalistically written but well documented--argues on genetic and ecological grounds that humanitarian and altruistic policies aimed at helping poor nations is unnatural, irrational, and destined to produce, in time, a crisis of global proportions. The reason is that such policies exacerbate already soaring birth rates and further encourages such nations to ignore the requirements of self-reliance and the carrying capacity of their own natural environments. As regards the dilemma between distributive justice now and intelligent regard for posterity, the author, contrary to John Rawls, would choose the latter alternative. He also issues a caveat against hoping for technological miracles which would break the deadlock. In the final analysis, ecological impact statements must take precedence over international charity.

365 ENERGY AND AGRICULTURE IN THE THIRD WORLD
Makhijani and A. Poole
Cambridge, Mass.: Ballinger, 1975

This book is one of a series of alternative energy studies commissioned by The Energy Policy Project of the Ford Foundation in 1971. The focus is on the amount and types of energy needed to transform agriculture, raise enough food, and provide other necessities for the people of the Third World. Decentralized and nonconventional energy technologies such as village biogas plants, wood pyrolysis, solar, wind, and small diesel engine electric generation are discussed. There are accompanying charts, graphs, efficiency comparisons, and other technical data.

366 ENERGY POLICY: CAPITALISM ANYONE?
Irwin M. Stelzer
Vital Speeches of the Day, Nov. 1, 1979

The speaker explores three elements of government energy policy he considers detrimental to the free market system: the assumption that market mechanism will not serve effectively as an allocator of fuels, the assumption that excessive acquisition of material things is bad, and the reliance upon desire of entrepreneurs to have a risk-free society. These underlying forces reflect in several specifics of energy policy cited by the speaker, such as tariffs versus quotas in aiding the free market to function. He admits industry must bear some blame for increasing government regulation and policymaking. He outlines a role where government sets certain parameters but minimizes its involvement in daily consumption and supply decisions.

367 U.S. ENERGY: MOVING OFF THE RAZOR'S EDGE
Charles J. Dibona
Vital Speeches of the Day, Dec. 1, 1979

The speaker stresses that moving off the razor's edge of U.S. energy supply requires both energy conservation and increased energy production, specifically domestic oil, natural gas, coal, and nuclear power. He notes that Americans tend to swing between extreme approaches instead of moving ahead in an orderly way. He cites many variables that affect imports and that the sensible move is the exercising of all options to the extent they are economical and safe. He cautions that synthetics and renewable energy sources will make small contribution in the next decade. He suggests that prices must be permitted to clear the markets and that today's environmental and land-use laws must be reassessed. In spite of difficulties in attaining a reasonable mix of energy solutions the U.S. needs to take advantage of every option.

368 THE NEW CROP OF ENERGY TAX SHELTERS
Business Week, Sept. 1, 1980

This article notes that tax shelter opportunities have a whole new field in energy development ventures, ranging from 10% credit in making fuel from sawdust to 15% credit on investments in solar power schemes. A wide realm of energy development projects is described. Unproven technology and heavy government subsidy pushes promoters to private placement with a limited number of investors and high minimum investment. Respected tax shelter analysts stress that profit potential is of equal importance to tax benefit. Recent legislation rules yet indefinite, and the IRS interpretation is a risk. If the energy project fails, tax credits must be returned. High tax rewards are possible, but high risk is involved.

369 AN OIL GIANT'S DILEMMA
Business Week, Aug. 25, 1980

The article examines a company's financial and management problems of effectively using cash rapidly amassed from sudden changes in the oil market--before its main oil reserves run out. Sohio lacks management expertise/depth to make quick, decisive use of funds, and even with little experience in areas outside conventional energy activity it may have to move into some of those or into non-energy efforts and then bear political and societal criticism for doing so. Synfuel plans may create problems with government because of controlling foreign ownership. The main problem explored in the article is the effective management skills needed to redeploy assets productively when energy concerns are politically paramount.

370 ENERGY AND JOBS FOR THE FUTURE
Rafael Fermoselle
VocEd, May 1980

The article examines occupational areas that may experience growth and regions where jobs may develop and the need to coordinate plans to train workers as a result of the development of a mix of difference energy resources. Insight is provided into labor concerns such as labor intensive nature of solar technology where labor needs primarily require traditional skills. The article cites areas, such as energy-efficient technologies, where retraining will be important, and stresses the vocational education role as one that must coordinate with multiple agencies.

371 THE SUN AS A PARTNER IN DESIGN
Michael Harris
Living Alternatives Magazine, March 1980

The author challenges the construction industry to incorporate age-old principles of designing with the sun, as well as newly-developed solar technology to provide low energy using homes. He describes designer/construction success in using passive solar technology and notes that designing to include this adds little to construction cost. Retrofitting a house for solar heating is more complicated than incorporating it into the original design, but is possible and economical. While each individual shelter presents unique solar design problems, resolution of them does not await lengthy development of solar technology--merely concern and desire to resolve the problems.

372 OIL IN ABUNDANCE--WITHOUT TAXES OR SYNTHETIC FUEL
Jude Wanniski
Harpers, October 1979

Wanniski believes energy and economic policies of the federal government have created the energy shortages. He states that the President has ignored true dimensions of the problem and has failed to consult the producer segment of society. He charges that development of synfuel is too costly and that business and labor have a near-sighted view focused on large individual gain at the expense of the total economy. He believes the Senate should put policies in appropriate perspective but then quotes views of specific senators which vary considerable. The author concludes that vast amounts of conventional oil wait for discovery once all governments allow rewards to be commensurate with high exploration risks, avoiding the syndrome of too few looking in too few places.

373 ENERGY IN THE '80's
Russell C. Youngdahl
Vital Speeches of the Day, Dec. 1, 1979

Youngdahl suggests that if the "what-iffers" do not delay current plans and possibilities, the energy needs of the country can be met in the 1980's. He cites numerous examples of blocks he perceives as those thrown up by groups who concern themselves with "What if we develop synfuel and it's too costly?". The speaker believes the development of domestic resources is the key to stability in the energy economy. He suggests promoting synfuels and nuclear energy programs as rational solutions. He believes we have had an era of luxurious delays while evaluating impact of man upon his environment. He urges non-abandonment of energy options by surrender to anti-technology forces.

374 COPING WITH TECHNOLOGICAL CHANGE
Peter Drucker and Charles DeCarlo
Managing Discontinuity Film Series
Rockville, MD: BNA Films

Drucker and DeCarlo discuss means for coping with technological change placing emphasis on the agent responsible for taking the initiative in managing technology--government or entrepreneur. They agree that society wants management of technology along with appropriate shifts in management goals to provide what consumers want from technology. Neither believes that technology should be stymied but does need direction. Issues of who and how of technology management have crucial implications for coping with energy issue aspects of technology. Direct application of management issues to the energy problem should stimulate management students who view the film.

375 FUTURE OF TECHNOLOGY
Peter Drucker and Charles DeCarlo
Managing Discontinuity Film Series
Rockville, MD.: BNA Films

Drucker and DeCarlo identify areas where technology will be a challenge. One such area is storage of electrical power. Though energy technology as such is not the focus of the film, the points discussed are applicable to debate on the future of the energy industry and how problems will be resolved: social view of technological impact, responsibility for research and development, and small versus large firm participation in development. Film dialogue can stimulate discussion about decisions for use of energy in supplying consumer goods versus producer goods, impacting on future productive potential or about production of "long-product-life" goods versus "transient-novel-diverse" goods when working from limited energy resources.

376 OIL'S NEW POWER STRUCTURE: THE DECLINING ROLE OF THE MAJOR INTERNATIONAL OIL COMPANIES
Business Week, Dec. 24, 1979

This article notes the trend of oil producing countries to control crude and of consuming countries to control prices and products. It stresses the erosion of the complicated worldwide distribution system built by industry. Moving crude around in the right mix to the right place is a complex process which would become inefficient if undertaken by governments. Country-to-country deals could further politicize oil, limiting the buffer role of international oil companies. It notes that joint action by consumer nations lags behind joint action of producer nations. Though major companies can no longer ensure oil price stability and supply, governments cannot afford to lose their technology in finding, producing, refining, and distribution. However, even the most powerful companies will feel the impact of a new power structure, possibly coming to resemble utilities' structure.

377 WHAT'S AHEAD FOR SOLAR ENERGY? LATEST SIZE-UP
Denis Hayes
U.S. News and World Report, March 3, 1980

Hayes believes that solar sources can produce 20 percent of the nation's energy by the year 2000, with about half from direct solar sources and half from indirect sources. He says that passive solar design is the best direct solar investment today. He believes that photovoltaic cells will be economically competitive with conventional power plants by mid-'80's. Hayes believes that the adoption of national performance standards and routine market shakeout are the best answers to incompetence in the solar industry. He describes the changes he predicts in consumer items and in the industry resulting from conversion to solar. He comments on the ability of energy resources to shape attitudes and to stimulate major social transformation, both in individual lifestyles and in industry.

378 POLLUTION CONTROL: THE HARD DECISIONS
Peter Drucker and Robert Hansberger
Managing Discontinuity Film Series
Rockville, MD.: BNA Films

Though this film is not geared specifically to pollution problems resulting from attempts to meet energy needs, the concerns discussed by Drucker and Hansberger are directly applicable to energy issues: trade-off between promoting nuclear power development (or increased coal production) and creation of environmental pollution problems. The same questions must be faced regardless of industry which causes pollution, and power stations, for example, are among the heavy violators. The extent to which energy sources should be developed which have high environmental consequences must be addressed. Who makes the decisions, who sets the priorities, how much standard of living must be sacrificed, or who gets hurt from actions taken--these are questions appropriate for decision makers in the energy industry.

379 SOLAR ENERGY: TRAINING NEEDS IN VOCATIONAL EDUCATION
Gerard G. Ventre and David E. LaHart
Florida Vocational Journal, March, 1980

The authors assert that consumer inability to detect solar installation problems added to the problems created by unskilled installers could threaten the solar age. Technician and mechanic level training, they say, appear to be crucial to future success, particularly in solar water heating. Training programs which stress development of add-on skills are recommended over training a distinctly new worker, the solar specialist. They urge limiting the number of solar specialist training programs but encourage the increased provision of additional-skills training for existing tradespersons. Most of the jobs created by solar industry growth will occur in construction and conversion areas rather than in research. The need for solar energy scientists and engineers will increase, but the strong growth will be for technicians and mechanics

380 WORLD ENERGY: A MANAGEABLE DILEMMA
John P. Henry, Jr., Eugene Harless, and Jay B. Kopelman
Harvard Business Review, May-June, 1979

The article reports results of studies conducted at SRI International which accommodated multiple variables through use of a complex computer program and analysis of model-generated results. The authors provide an optimistic view, predicting leveling of prices by the mid-1980's, competition resulting in rapid conservation efforts, and vast technological improvements. They conclude that opportunities to increase the world supply of hydrocarbons, to diversify supply sources, and the substitute fuels will continue well into the next century. Significant business opportunities exist for far-sighted, energetic entrepreneurs who price competitively and explore all energy-related fields, including those created by energy management itself. They suggest that good energy management will resolve energy uncertainties.

381 SOLAR ENERGY TECHNOLOGY TASK INVENTORY FOR FLORIDA
Collen M. Kettles, Hilary Kiell, and Chris Beck
Final report prepared for the DOEd/Division of Vocational Education, FSEC, June 28, 1979

This report provides an inventory of competencies required by engineers, technicians and mechanics in the solar energy field. Information was obtained from a questionnaire administered to manufacturers, distributors, installers, and consulting engineers and architects involved in solar energy systems. The inventory of tasks presents grouping by presumed competency level: engineer, technician, mechanic. The report reveals an overlapping of task performance and addresses the efficient use of human resources. The report presents conclusions based on the research associated with the solar energy technology task inventory.

382 ALTERNATIVE FUELS FOR THE FUTURE: SORTING THEM OUT
1980 General Motors Public Interest Report, April 7, 1980

The article discusses various options for transportation fuels, noting that petroleum will continue as the major fuel in the near term but that alternatives must be developed. It asserts that determining the best future fuel options requires balancing several trade-offs which include overall energy efficiency of the fuel/engine system, energy density of the fuel, safety in production and use, and relative costs. A brief summary is given of the potential application of hydrogen, acetylene, ammonia, hydrazine, and alcohols, some of the alternatives evaluated by General Motors. GM predicts the most likely alternatives in this order: fuel from oil shale, from coal, and then from biomass. National commitment is urged to begin serious development of the primary candidates--oil shale and coal.

383 RENEWABLE ENERGY RESOURCES: WIND, WATER AND SOLAR RAYS
Center for Humanities, Inc., Box 1000
Mount Kisco, NY 10549

This two-part slide and tape production illustrates real and proposed facilities which produce energy from renewable resources of wind, water and solar rays. The production of energy from biomass conversion, hydroelectric dams, solar towers, photovoltaic cells, wind turbines, harnessing of tides, ocean thermal energy conversion are illustrated. Heating from both passive and active solar design is amply illustrated with examples from today and ancient Mesa Verde. Potential, limitations, cost/benefit ratios, and economic trade-offs are discussed. Economically feasible capture, storage, and distribution of energy from these renewable sources are a challenge to both private business and to government to meet the problem of diminishing fossil fuels.

384 ENERGY AND THE CONSUMER: THE RISKS OF REVOLUTION
Charles N. Cawley and E.J. Fenyves
Current History, May, 1980, 210(6)

The 1973 Arab oil embargo has produced a revolution in America that may trigger abrupt social, political, and social changes. Arguing a pro coal and nuclear energy position, the authors contend that the major impediments to handling nuclear wastes are social and political, not technical. In the longer run, however, the authors say that alternative energy sources such as solar energy, nuclear fusion, and synfuels must be developed to deal with the potential of social change.

385 THE WORLD'S CURRENT AND FUTURE NUMBERS OF PEOPLE EMPLOYED AS RADIATION WORKS AND AS HEALTH PHYSICISTS
Klaus Becker
Health Physics, May, 1977, 429-434

In a somewhat technical article employing statistics throughout, Becker provides information about the ratio of individuals working in radiation industries in relation to the population of developing countries. As countries develop nuclear energy capacities, the number of workers employed in those industries will increase disproportionately. Based on the level of industrialization and development, the world is divided into four blocs: First, Second, Third, and Fourth Worlds. Becker contends that the gap between the First and Fourth worlds may widen with advancements in technology.

386 THE CRISIS OF AFFLUENCE
Harrison Brown
The Bulletin of the Atomic Scientists
Sept., 1979, 13(5)

1973 to 2008 represents the most critical period in the history of humankind as global forces converge upon one another. Rapid growth of population and affluence, increasing demands for energy, and decreasing quality of our resources combine with other forces to create the potential for the demise of industrialized, affluently complex civilization as we know it. Believing that an alternative is also possible if the world community acts harmoniously, Brown explores three aspects of the crisis of affluence: (1) decreasing the per capita consumption of resources, (2) nurturing those aspects of society which contribute positively to human welfare, and (3) decreasing those products now perceived as dangerous to society.

387 THE OPEC REVOLUTION: THE WORLD WILL NEVER BE THE SAME
Frank Collins
Progressive, Feb., 1980, 22(6)

Asserting that America's energy crisis is primarily an oil crisis, Collins briefly traces the history of the free marketplace in oil from 1928 to the formation of OPEC in 1960. Since 1973, the price of oil per barrel has risen from $3 to $27-30 on the world market primarily through the unification of OPEC. Discussing selected legislative bills, the Iranian revolution, and the profits of oil companies during the past several years, Collins concludes that the "energy crisis is only one aspect of a sociopolitical-environmental crisis now encompassing the globe".

388 A GATHERING STORM OVER SYNFUELS ON THE BIG SKY RANGE
Michael Parfit
Smithsonian, V.10, March 1980, 70(9)

Parfit describes the participants, activities, and accomplishments of the McCone Agricultural Protection Organization (MAPO), a small community action group in Montana, as it battled first with the Burlington Northern, Inc., a railroad based company, and the Bureau of Land Management in an effort to restrain the usage of Montana land for the production of synthetic fuels. MAPO wants the land used for agricultural purposes rather than as sites for coal liquefaction plants.

389 ACID PRECIPITATION: CAUSES AND CONSEQUENCES
Harvey Babich, Debra Lee Davis & Guenther Stotzky
Environment, May, 1980, 6-13

As a result of fossil fuel combustion, acid precipitation promises to be an international environmental problem well into the next century. Exploring the causes and sources of acid precipitation, the authors examine its environmental impact on the terrestrial and aquatic systems. Providing extensive technical data, the authors demonstrate the impact of acid rain throughout the United States. They also briefly explore the effects of acid rain on man-made materials and national monuments.

390 THE ROLE OF ENERGY: ECONOMIC GROWTH VS. COLLAPSE OF THE WORLD ECONOMICS
John Sawhill
Vital Speeches, March 15, 1978, 322(10)

In this address Sawhill asserts that the U.S. energy crisis is intrinsically linked with the world situation. He first discusses the outlook for world supplies of energy, then moves to a discussion of major studies on energy. Arguing that the collapse of world economics due to energy shortages is possible, he advances intermediate and long-term strategies to cope with the problem. Among the long-term strategies proposed are (1) pricing strategies (2) energy production strategies in non-oil producing countries (3) a nuclear policy.

391 ACID RAIN
Gene E. Likens, et al
Scientific American, Oct., 1979, 43-51

Acid rain is caused by the emission of sulfur and nitrogen oxides into the atmosphere by the burning of fossil fuels. As coal becomes more widely used as a source of energy, the trend toward more acidic rain will continue. Relying on technical data, accompanied by numerous charts and graphs illustrating trends, patterns, and acid precipitations around the world since the 1950s, the authors conclude that the solution to acid rain, though difficult and costly, lies in the decrease in emissions of sulfur and nitrogen oxides in the atmosphere.

392 NUCLEAR ENERGY: SURVIVAL AT STAKE
Nation's Business, Jan., 1980, 52(8)

The article explores the benefits and hazards of the use of nuclear energy. Focusing on such topics as licensing, Three Mile Island, regulations, electrical consumption, generating stations, and margins of safety, the article provides the reader with extensive, but readable, facts and statistics examining the two principle questions: Can the U.S. survive without nuclear energy? Can the United States survive nuclear energy?

393 AN ENERGY OVERVIEW: ARE THE CONSTRAINTS TO HEMISPHERIC ENERGY DEVELOPMENT TECHNICAL OR POLITICAL?
Melvin Gottleib
Vital Speeches, 596(5), July 15, 1979

Gottleib contends that there is no real shortage of fuels. The real shortage, he says, is of those fuels that can be produced cheaply enough to allow the development of industrialized countries and the maintenance of an acceptable quality of life. By discussing solar energy, fusion power, and the fission breeder reactor, Gottleib highlights the difficulties and complexities of creating fuels at a reasonable cost of production.

394 A NEW LOOK AT SMALL POWER PLANTS
David B. Champion and Michael D. Williams
Environment, April, 1980, 25-32

The article discusses the environmental advantages of small coal-fired power plants over large coal-fired power plants in terms of air pollution and the production of solid waste materials such as fly ash, bottom ash, and scrubber sludge production. Supporting and illustrating their arguments with several graphs and charts, the authors conclude that though small power plants offer economical and environmental advantages over larger plants, the construction of smaller plants in the Rocky Mountain West would still lead to serious environmental impacts.

395 A GLOBAL AND LONG-RANGE PICTURE OF ENERGY DEVELOPMENTS
Wolf Höfele
Science, 209(4452), July 4, 1980, 174-182

This article analyzes the balance between energy supply and demand on a global scale for the next 50 years. Particular attention is given to the long time span necessary to adjust to new energy sources. Reported here are the results of "high" and "low" energy consumption scenarios. The conclusion reached is that time will be the limiting constraint in adapting the energy supply infrastructure to changing resource availability.

396 THE ENERGY OUTLOOK: COMBINING OPTIONS
Robert Stobaugh and Daniel Yergin
Harvard Business Review, 57(17), Jan.-Feb., 1980

The most optimistic view of our energy future is the balanced combination of available sources plus the inclusion of solar energy. Developing their analysis with clear and extensive usage of charts, statistics, and factual data, the authors explore (1) the dangers of dependence on imports, (2) the prospects for independence of imports because of new natural resources and nuclear power, and (3) a balanced program in energy through renewable energy, conservation, and the production of energy with new incentives.

397 ENERGY POLICY AND BLACK PEOPLE
Vernon E. Jordan, Jr.
Vital Speeches, March, 1978, 341-344

Jordan argues that the National Urban League should be included in attempts to formulate an energy policy because a shrinking economy, caused by increasing energy costs, inevitably means compounded black disadvantages. Jordan identifies and discusses three pillars of an energy policy that are economically sound and potentially advantageous to the black community and other minorities: (1) the development of renewable energy sources, (2) conservation, (3) shielding the poor from adverse effects of energy policies.

398 AMBIVALENT TVA ROLES IN ENERGY AND CONSERVATION
Cassandra Tate
Smithsonian, 94(10), January, 1980

Tate's discussion traces the development and evolution of the TVA from its inception in the 1930's to the present. Contradictions between the early goals of the TVA and its present-day status as a large corporate consumer of coal and nuclear energy are explored. Attention is paid to the fight to stop the Tellico Dam on the basis that it endangered the snail darter, a small snail-eating fish living in the Little Tennessee River. Some statistics about the TVA and its costs and energy output are provided throughout the article.

399 THE NEED FOR RADIATION CONTROLS IN THE PHOSPHATE AND RELATED INDUSTRIES
Gary F. Boothe
Environment, April, 1977, 285-290

Controls are needed in Idaho's phosphate and related industries because significant amounts of radiation from those industries are entering the environment. Uranium, radium, and other uranium daughters occur as trace elements in the phosphate ore as it is processed at wet or thermal processing plants. A discussion of radioactivity in the air and water concludes with the assertion that more controls will result in less potential exposure.

400 THE NEED FOR NUCLEAR POWER
H.A. Bethe
Bulletin of the Atomic Scientists, March, 1976, 59-63

A concise, heavily documented article by a distinguished authority on energy, explaining in logical order the alternatives available to us and outlining the estimated future energy requirements by our society and the rest of the world. The article argues that these needs can best be met by utilization of nuclear power. The availability of uranium is explained both in quantity and geographic terms. Reactor safety is thoroughly discussed and potential danger to the public is extensively treated.

401 SOLAR POWER PLANTS: DARKHORSE IN THE ENERGY STABLE
Richard S. Caputo
Bulletin of the Atomic Scientists, May, 1977, 46-56

A highly acknowledged article on solar energy utilization techniques gives the requirements of each and the relative costs of these techniques as alternative energy sources. Geographical considerations are given treatment and the limitations are clearly stated. The anticipated natural physical restrictions are realistically and clearly stated and graphed for clarity.

402 THE ANSWER TO CITY TRAFFIC MAY BE A HORIZONTAL ELEVATOR
Daniel G. Chasan
Smithsonian, 4(4), 1973, 47-52

The design and operation of the various rapid transit systems that are currently operating are described along with those in the advanced planning stages. The article suggests that horizontal elevator systems -- much like those at Tampa International Airport -- may be the best solution to what is rapidly becoming a most serious social as well as energy problem: the moving of masses of people in our large urban areas by means other than the automobile.

403 COMING: SUPER WINDMILLS FOR SUPER POWER
Victor D. Chase
Popular Mechanics, May, 1978, 114-287

This article describes in great detail mechanics of the NASA designed wind turbines now in operation near Sandusky, Ohio. Cost comparisons are included for construction and operation to other traditional energy producing systems. Geographical maps are provided indicating which areas of the U.S. have prevailing windspeeds that would justify consideration. The article provides a description of commercial installation at Clayton, N.M. and its contribution to that community's energy supply.

404 ENERGY FROM WOOD WASTES
Nicholas P. Cherimisinoff
Environment, 19(4), 1978, 25-31

A rather technical article, but thoroughly understandable to the student focusing on the tremendous amount of wood wastes produced by industry in this country. The author carefully explains how this 3 billion cubic feet of recoverable wood wastes could provide for a considerable amount of energy production. Well prepared graphs compare relative costs to other alternative energy sources and show at what price level it would be competitive to oil. Also, projections are given for future availability of this source.

405 THE OPTIONS FOR USING THE SUN
John B. Goodenough
Technology Review, Oct.-Nov., 1976, 63-71

This is a thoroughly technical, but not too difficult, explanation of the mechanics involved in the several methods for the collection of solar heat and the conversion of that heat to electrical energy. An interesting discussion of the "heat engine" proposal for use in open ocean areas is included as well as a fine description of solar heat collectors and other possible utilization proposals.

406 PLUTONIUM: "FREE" FUEL OR INVITATION TO A CATASTROPHY
Peter Gwynne
Smithsonian, July, 1976, 93-99

This is an informative article by a highly respected nuclear scientist on the controversial subject of the vast amounts of nuclear waste materials and their possible utilization as fuel for future nuclear power plants. The author argues strongly for its use but clearly states the risks outlined by the critics and offers answers to their concerns.

407 THE HYDROGEN ECONOMY
Derek P. Gregory
Scientific American, 228(1), 1973, 13-21

The focus of this article is on an energy regime in which all energy sources would be used to produce hydrogen, which could then be used to provide a nonpolluting, multi-purpose fuel. The author suggests that there be supply lines throughout the nation similar to existing natural gas lines. The author pleads that we need not focus solely on developing new sources but also on devising new methods of energy conversion.

408 SYNTHETIC FUELS: PRICES, PROSPECTS AND PRIORITIES
Ogden Hammond and Robert E. Baron
American Scientist, 64, 1976, 407-417

Dr. Hammond, director of the MIT Innovation Center, describes the history of synthetic fuels utilization and the raw materials and technologies presently available for the manufacture of these alternative energy sources. Easy-to-follow tables clearly present the various materials necessary to production and their relative costs. Special attention is given to the conversion of tar sands and shale as well as coal liquefaction. Meaningful presentation of fossil fuel reserves both nationally and world-wide are in table form.

409 WINDPOWER NOW
David R. Inglis
Bulletin of the Atomic Scientists, Oct., 1975, 20-26

This article takes to task the federal government's slow-paced efforts to consider the utilization of an obvious alternative supplier of at least a portion of our energy needs. The article traces the development of wind driven generators from the early 1930's to the present. It is an excellent description of engineering requirements to be encountered and suggests steps that should be followed for immediate development of wind systems including means of using offshore wind power.

410 LIQUID HYDROGEN AS A FUEL FOR THE FUTURE

Lawrence W. Jones
Science, 174, 1971, 367-373

Although dated 1971, this article addresses a 1980's problem. The article proposes and discusses the replacement of hydrocarbon fuel for transportation with liquid hydrogen. As nuclear energy is not considered practical as a direct energy source for vehicular locomotion, several options are examined including the electrochemical storage battery, the fuel cell and the external combustion engine. It concludes hydrogen as the most promising energy source on an energy-for-unit weight basis. Such qualities as non-pollutant and technical feasibility are explained.

411 FUEL FROM WASTES: A MINOR ENERGY SOURCE

Thomas R. Maugh
Science, 174, 1975, 599-610

The focus of this article is on the growing problem of increasing amounts of solid waste in a society whose demands for fossil fuels greatly exceed production possibilities, not to mention supply. The author discusses three methods of conversion: hydrogenation, pyrolysis and bio-conversion. Tables display seven areas of solid wastes produced nationally in one year and show their comparisons in cost and energy potential for oil and methane gas conversion.

412 NATURAL GAS: THE UNITED STATES HAS IT IF THE PRICE IS RIGHT

Thomas R. Maugh
Science, 191, 1976, 549-558

A concise, well-documented article dealing with the present state of the art of natural gas development. The article provides logical sequence of source development for the future. A comparison is made with developmental costs of coal mining showing the very favorable argument for gas. The energy sources examined are methane trapped in coal beds, the Devonian shale reserves and tight sand strata. Some of these sources could be tapped with the detonation of nuclear devices.

413 CATCH THE SUN

Janet Raloff
Science News, 113(16), 1978, 248-267

This is a rather optimistic view of the future prominence of solar energy in our world. There is an in-depth explanation of various utilization methods now under serious consideration complete with artists' renderings of collectors and projections for areas of future study. The article is packaged with two others on solar research.

414 ENERGY CHOICES FOR THE 1980's

David C. White
Technology Review, 82(8), Aug./Sept., 1980

This article gives a resource by resource analysis of the future potential of all forseeable U.S. energy supplies in both the short and the long run. Strong economic consideration pervades this article authored by the Director of MIT's Energy Laboratory. His analysis is useful in providing a credible perspective on the severity of the energy crisis. He strongly argues for conservation and concludes that our dependence on imported oil could end if alternative fuels are used for transportation purposes.

415 FLORIDA LOCAL GOVERNMENT ENERGY MANUAL

Jim Jackson
Governor's Energy Office, 1981

Each Regional Planning Council in the state has prepared a chapter of the manual, which is intended to be a working document for local energy management programs. Topics covered are administrative actions, conservation in existing governmental buildings, conservation in new governmental buildings, streetlighting, vehicle fleet efficiency, procurement practices, employee programs, resources recovery, energy planning, participation in state and federal energy conservation programs and sewer and water utilities.

416 IMPACTS OF RISING PRICES UPON RESIDENTIAL ENERGY CONSUMPTION, ATTITUDES AND CONSERVATION POLICY ACCEPTANCE
Peter Gladhart, James Zuiches, and Bonnie Morrison
Energy Policy in the United States: Social and Behavioral Dimensions, New York: Praeger Publishers, Inc., 1978

Responses to differing rates of energy price changes are reported in this statistical study of 216 Lansing, Mich. S.M.S.A. households. The degree of acceptance of energy conservation measures is noted.

417 ENERGY AND THE COMMUNITY
Raymond Burby, III and A. Flemming Bell, Editors
Cambridge, Mass.: Ballinger Publishers, 1978

A detailed look at a variety of areas, including growth, transportation policy, federalism, utilities rates changes, land use planning, building design, pollution control, and local politics. Suitable as a reader.

418 UNITED STATES ENERGY POLICY AND THE POLITICAL ECONOMY OF PARTICIPATION
David W. Orr
The Journal of Politics, 41(4), Nov., 1979

Although energy policy is generally considered as a technological phenomenon, this article describes the ethical and political problems also associated with the energy crisis. Arguments for increased public participation highlight a comparison of the "hard" versus the "soft" paths to the energy future.

419 ENVIRONMENT AND ENERGY USE IN URBAN AREAS
Organization for Economic Co-operation and Development
Paris, 1978

Based upon statistical research on the changes in energy use in the household and commercial sectors, a variety of conservation strategies are discussed by the authors. Included are case studies of five cities which suggest a relationship between energy conservation and the reduction of some forms of pollution.

420 FORGOTTEN FUNDAMENTALS OF THE ENERGY CRISIS
Albert A. Bartlett
American Journal of Physics, 46(9), Sept., 1978

A general introduction to the arithmetic of growth rates is followed by an examination of the expected life of our fossil fuels. After criticizing pronouncements of "experts" on the life expectancy of our energy supplies, Bartlett concludes with pleas for education on the dangers of unconstrained growth and on the need for the use of alternative energy sources and recycling. He calls for increased public involvement in policymaking.

421 CONSERVING ENERGY: PROSPECTS AND OPPORTUNITIES IN THE NEW YORK REGION
Joel Darmstadter
Resources for the Future, Baltimore, MD: Johns Hopkins Press, 1975

Written during the 1974 fuel crisis, this book examines existing energy use in light of the economic structure of the New York area. It then outlines various conservation possibilities given market adjustments, institutional changes, and selected policy incentives. Strong consideration of the concept of end-use is included.

422 A HANDBOOK OF ENERGY POLICY FOR LOCAL GOVERNMENTS
Edward H. Allen
Lexington Books, Inc., 1975

In addition to discussing the need for local preparation for energy emergencies, this handbook questions the extent of the powers of local government in the formulation of energy policy as contrasted with those of the federal and state governments. Included are sections on the essentials of local energy policy, model ordinances for energy regulation and for the creation of energy advisory boards. Appendices include the Denver, Colorado energy code, the Los Angeles, California energy emergency conservation program and the energy code of Wooster, Ohio.

423 POLISCIDE
Theodore J. Lowi and Benjamin Ginsberg, Editors. New York: MacMillan Publishing Company. 1976.

A very detailed description of the politics of the installation of an Atomic Energy Commission accelerator in Weston, Illinois. The authors focus on statements made preceeding the project in light of the results of the project: the disappearance of the village of Weston. The "poliscide" of Weston is the focus of case studies on the national, state, metropolitan, county, village and site levels. Indexed.

424 COUNTY ENERGY PLAN GUIDEBOOK
Alan Okagaki with Jim Benson
Institute for Ecological Policies,
Fairfax, VA, 1979

The Guidebook is a step-by-step do-it-yourself manual for creating a renewable energy plan at the county level. It encourages citizens groups to form for work with local officials to study sectoral energy supply/demand and conservation potentials. Copies of the Guidebook were recently purchased by the U.S. DOE Region IV Office and sent to all counties in the southern region, including Florida.

425 GOVERNMENT PROCUREMENT AND OPERATIONS
Ivan J. Tether
Cambridge, Mass.: Ballinger Publishing Co., 1977

This book examines the legal and institutional aspects of conservation through government procurement and operations. Also suggested are methods in which these governmental measures can spill over into the private sector.

426 MANUAL FOR LOCAL GOVERNMENTS ON ENERGY CONSERVATION AND REGULATIONS
Duke Woodson
Center for Governmental Responsibility,
University of Florida Law School,
Tallahassee, FL: Governor's Energy Office,
Aug. 31, 1980

This is to be a working manual for local governments in Florida. It will address comprehensive planning, zoning, subdivision regulations, deed restrictions, building codes, transportation policy, utility regulations, solar easements, etc. Included will be model ordinances and examples of local actions already taken in some Florida localities.

427 ENERGY-EFFICIENT COMMUNITY PLANNING
James Ridgeway
Public Resources Center, Emmaus, PA:
J.G. Press, 1978

This is an ideal coursebook for a course in local government. It includes case studies of several of the more innovative localities in energy policymaking; e.g. Davis, California, Seattle, Washington, Hartford, Connecticut and Northglenn, Massachusetts. These case studies are followed by copies of the government documents which were produced by each action. Examples of community innovations using biofuels, audits, financing, new housing designs and community energy corporations are also included.

428 ENERGY CONSERVATION AND MANAGEMENT GUIDE FOR SMALL MUNICIPALITIES AND SCHOOL DISTRICTS
U.S. HUD, Office of Policy Development and Research, by the Southeast Georgia Area Planning and Development Commission, April, 1979

This hands-on guide for local administrators for use in energy management efforts includes chapters on energy audits, forms and accounting, on-site energy use surveys, energy use guidelines, energy-saving ideas, as well as a method of monitoring and evaluation.

Sample forms are provided. This document is useful in evaluation of intergovernmental coordination efforts aimed at local self-help projects.

429 ENERGY AND SOCIAL CHANGE
James O'Toole, et al
Cambridge, Mass.: MIT Press, 1976

A study in economic, technological and social forecasting into both the short and long runs. Special concern is given the effects of rising energy prices on both the national and international levels. The second part of the book is a Delphi study wherein many experts from diverse fields were asked to make predictions, which were then tabulated for a roundtable discussion to obtain consensus.

430 OVERCOMING LAND USE BARRIERS TO SOLAR ACCESS: SOLAR PLANNING RECOMMENDATIONS FOR LOCAL COMMUNITIES
C. Vidich
Central Naugatuck Valley Regional Planning Agency, Waterbury, CT, Sept., 1979

Two common land-use restraints to solar utilization are zoning restrictions against solar devices and blockage of sunshine by adjoining buildings or vegetation. Vidich suggests that planning agencies take a positive role in solar siting, lot orientation, and building design standards.

431 METROPOLITAN DADE COUNTY FLORIDA FUEL MANAGEMENT PROGRAM
Metro-Dade Energy Planning Office, 1975

This document describes the 1973-1975 initiatives of Dade County to ration automobile and truck fuels through the creation of an energy office, the issuance of gas coupons for the Metro fleet and through a greater awareness of supply and demand.

432 THE WOLF GUARDING THE DOOR: AN ANALYSIS OF THE U.S. DEPARTMENT OF ENERGY'S BUDGET
Vicki F. Tynan
Institute for Ecological Policies, 1980

This booklet is critical of the large U.S. DOE budget allocation to several large corporations primarily for the development of the U.S. nuclear program, at the expense of programs in alternative energy development. Appendices include the actual 1980 DOE budget, the proposed 1981 DOE budget, a memo from Energy Secretary Charles Duncan, Jr., concerning planning for fiscal years 1982-86.

433 ENERGY POLITICS (2nd EDITION)
David H. Davis
Cornell University, New York: St. Martin's Press, 1978

This public policy approach to the federal government's attempts to deal with the energy crisis contains an analysis of the way in which energy policy has evolved in fragmented fashion. It develops a conceptual scheme which is then applied to each fuel cycle: coal, oil, natural gas, electricity, nuclear power and alternative fuels.

434 ECOLOGY AND THE POLITICS OF SCARCITY: PROLOGUE TO A POLITICAL THEORY OF THE STEADY STATE
William Ophulus
San Francisco: W.H. Freeman and Co., 1977

Based upon the author's doctoral thesis, the book is an attempt to bring together the diverse areas of ecology, energy, technology, and normative political theory. Many important issues are considered including limits to growth, the nature of the American economic system, technological erosion of politics, and the international implications of fossil fuel shortages.

435 ENERGY FUTURE: REPORT OF THE ENERGY PROJECT OF THE HARVARD BUSINESS SCHOOL
Robert Stobaugh and Daniel Yergin, Editors
1979

Clearly and separately written essays by members of the Harvard Business School on each of the major energy sources: oil, gas, coal, nuclear, conservation, and solar. Each section contains a brief historical analysis, a description of current problems and regulations, and a prognosis of future developments. The study is very critical of oil, coal, gas and nuclear energy sources, hopeful about solar power, and strongest in favor of conservation. Excellent compilation of data in a very readable form.

436 SAVE ENERGY AND MONEY THROUGH INTELLIGENT BUYING
Maryland Department of Natural Resources
Energy Policy Office, Dec., 1978

A short paper which discusses some basic considerations of energy-wise buying including energy efficiency standards, life cycle costing, recycled materials use and product lifetime considerations. Bibliography included.

437 ALTERNATIVE REGULATORY POLICIES FOR DEALING WITH THE NATURAL GAS SHORTAGE
P.W. MacAvoy and R.S. Pindyck
The Bell Journal of Economics and Management Science, 4(2), Autumn, 1973, 454-498

This paper examines the effects of alternative regulatory policies on gas reserves, production supply, production demand and prices. An econometric model is developed to explain the gas discovery process, reserve accumulation, production out of reserves, pipeline price markup, and wholesale demand for production on a disaggregated basis. The conclusion reached, by simulating the model under alternative policy assumptions, is that the gas shortage can be ameliorated through phased deregulation of wellhead sales.

438 THE ECONOMICS OF ENERGY WHAT WENT WRONG
Roger LeRoy Miller
Glen Ridge, NJ: Thomas Horton and Company, 1974

This brief book provides a lively introduction to the topic of energy from an economic perspective. It is accessible to those with very little background in economics and includes a wide variety of energy issues. Topics include: the monopoly practices of OPEC, conservation, the intergenerational problems of resource use, energy and pollution, energy regulation, supply and demand and other allocation systems, and the costs and benefits of achieving energy independence.

439 U.S. ENERGY POLICY AND ECONOMIC GROWTH, 1975-2000
E.A. Hudson and D.W. Jorgenson
The Bell Journal of Economics and Management Science, 5(2), Autumn, 1974, 461-514

This paper presents a new approach to the quantitative analysis of U.S. energy policy, based on an integration of econometric modeling and input-output analysis. The model consists of production models for nine industrial sectors, a model of consumer demand, and a macroeconometric growth model for the U.S. economy. The model is then used to design a tax program for stimulating conservation and reducing import dependence without major economic cost.

440 THE ENERGY PROBLEM: MUST SIMPLE THINGS BE MADE COMPLEX?
Richard H. Leftwich and Ansel M. Sharp
Economics of Social Issues, Business Publications Inc., Chapter 4, 4th edition, 1980, 99-122

An introductory level overview of the energy problem, this article provides background information and analysis of energy issues. The necessary economic tools are developed within the article.

Included are discussions of the adequacy of future petroleum supplies, alternative energy sources, the consequences of price controls, the efficiency of the price mechanism, and the role of government policy.

441 IS THE END OF THE WORLD AT HAND?
Robert M. Solow
Challenge, March-April, 1973, 39-50

This article criticizes the "doomsday" models in general, and the Club of Rome computer simulation in particular. Professor Solow argues that all such models are defficient because they allow no room for ordinary market forces. Changing prices and the possibility of greatly increasing productivity from our natural resources are not taken into account in "doomsday" models and hence they are all analytically flawed. The overshoot-collapse pattern is built into these models very near the surface, by assumption, and this fact makes such models almost useless as science.

442 AN ECONOMIC MODEL OF THE WORLD OIL MARKET
Michael Kennedy
The Bell Journal of Economics and Management Science, 5(2), Autumn, 1974, 540-577

This four sector, multiregional economic model is used to determine the levels of consumption, production, and price for each commodity in each region, the pattern of world trade flaws, and the refinery capital structure and output in each region. The consequences of monopolistic behavior (implemented through OPEC) can then be studied through simulating the effects of changes in the export tax.

443 THE EFFICIENCY-EQUITY DILEMMA OF DEREGULATION: THE CASE OF NATURAL GAS
Richard B. McKenzie
Economic Issues in Public Policies, New York: McGraw-Hill Book Co., 1980, 76-91

This article argues that the benefits of natural gas regulation have been capitalized in the value of homes and businesses with natural gas connections. Thus, while the meter price of natural gas has been controlled, the effective price (including higher mortgage payments) has not been controlled. A move to deregulate now would cause the effective market price to fall rather than rise with a consequent loss of wealth to natural gas homeowners. The article concludes that deregulation can be both efficient and equitable if: (1) we use a tax-compensation scheme, and (2) we deregulate several industries at once.

444 WHAT PRICE ENERGY
Newsweek, May 2, 1977, 12-30

A rather detailed look at the energy proposals eminating from the Carter administration, this article addresses the issues of conservation, deregulation, tax policy with respect to energy production and use, and the development of coal and synthetic fuels for future U.S. energy needs. Insightful comments on the Carter program are provided by Nobel Prize winning economists Milton Friedman and Paul Samuelson.

445 U.S. ENERGY POLICY: A PRIMER
Edward J. Mitchell
Washington, D.C.: American Enterprise Institute for Public Policy Research, June, 1974

This is a survey article of U.S. policy with respect to oil and natural gas. Much of our current energy difficulties are blamed on energy policy and regulation. The article concludes that if the free market were permitted to operate, forces would be set in motion that would substantially reduce the problem.

446 THE NECESSITY OF FISSION POWER
H.A. Bethe
Scientific American, 234(1), January, 1976, 3-13

This article makes a compelling argument that nuclear fission is an absolutely necessary technology to replace the shortfall of fossil fuels between now and the end of the century. The conclusion

452 FOOD FOR PEOPLE NOT FOR PROFIT: A SOURCEBOOK ON THE FOOD CRISIS
Catherine Lerza and Michael Jacobson, Editors
1975

This is an excellent anthology on food production (corporate farms, additives), costs, nutrition (sugar, breastfeeding), global problems (green revolution, hunger), the poor, and government regulation. It includes appendices on action ideas, listing readings, organizations, etc. and is an incredible compilation of facts on food.

453 THE POLITICS OF ENERGY
Barry Commoner
1979

This is an excellent energy critique and futures scenario. The first three chapters are rather narrowly focused on Carter's National Energy Plan, but its dissection treats us to the realities of political proposals, showing how most programs have the worst effect on the poor. The exclusive, long-range energy choice is nuclear or solar with Commoner advocating solar because, interalia, of its diseconomies of scale. The bridge field to this non-nuclear future is solar methane, replacing natural gas.

454 UNSETTLING OF AMERICA: CULTURE AND AGRICULTURE
Wendell Berry
1977

A well written work pitting agriculture against agri-business. It places farming issues in a wide cultural setting. Not only does Berry issue an indictment of our past land policies and uses, but he also examines hopeful future possibilities.

455 CREATING ALTERNATIVE FUTURES: THE END OF ECONOMICS
Hazel Henderson
1978

An exciting and imaginative collection of articles is presented showing the misleading nature of most current economic thinking and proposing directions for a hopeful future.

456 FOOD FIRST: BEYOND THE MYTH OF SCARCITY
Frances Moore Lappe and Joseph Collins
1978

This is a good account of world hunger, written in a stimulating question/answer style. It shows how neither population growth nor nature can be blamed for world hunger but how economic and political forces can be. Food self-reliance is advocated.

457 STEADY-STATE ECONOMICS: THE ECONOMICS OF BIOPHYSICAL EQUILIBRIUM AND MORAL GROWTH
Herman E. Daly
1977

Daly attacks classical input/output, growth economics and argues for a steady-state economics wherein ecological factors are considered integral and are not treated as externalities. Within a steady-state economics, Daly advocates such things as transferable birth licenses, governmentally auctioned depletion quotas of natural resources, and maximum and minimum limits to personal income. He rebuts arguments usually raised against any proposal to limit energy growth. The book is relatively non-technical and quite readable for the non-economist.

458 TOWARD A STEADY-STATE ECONOMY
Herman E. Daly, Editor
1973

This work is a collection of essays on political or steady-state economics. The conflict of economic growth with biophysical constraints is considered in Part I with essays by Nicholas Georgescu-Roegen, Paul Ehrlich and John Holdren ("Impact of Population Growth"), and Leon Kass. Part II focuses on social constraints and the problems of design and transition to a steady state with classical essays by Kenneth Boulding, Garrett Hardin ("Tragedy of Commons"), Daly, William Ophuls, and E.F. Schumacher ("Buddhist Economics"). Part III considers the ethical problems and assumptions of the steady state (C.S. Lewis).

reached is that throughout this period, electricity from nuclear fuel will not only be necessary, but will also continue to be substantially cheaper than that from fossil fuel.

447 ENERGY, ENVIRONMENT, AND ECONOMIC GROWTH
Anne P. Carter
The Bell Journal of Economics and Management Science, 5(2), Autumn, 1974, 578-594

A closed, dynamic, input-output model is used to evaluate the effects on economic growth of specific pollution abatement and new energy technologies. The structural changes considered are: (1) changes in technology for electricity generation, transmission and distribution; (2) reliance on coal gasification for new fossil fuels; and (3) pollution abatement to meet stricter standards for six types of air, water and solid waste disposal. The conclusion reached is that the sum of all of these changes tend to substantially reduce the long run growth potential of the system - though individually their effect is much less pronounced.

448 NATURAL RESOURCES
James P. Quirk
Intermediate Microeconomics, SRA, Chapter 18, 1976

This article presents the economics of replenishable and exhaustible natural resources under different property right assignments and demonstrates that replenishable natural resources can be harvested over time on a regular basis without exhaustion. When appropriation is possible, the owner chooses a time path of harvesting that maximizes the discounted present value of the cash flow generated by the resource. When the resource is unappropriated, the long run harvesting rate will be inefficient. Exhaustible resources are not harvestable on a continuing basis.

449 THE BATTLE FOR ENERGY INDEPENDENCE: HOW MUCH OF A GOOD THING?
Timothy H. Hannan
Business Review, Federal Reserve Bank of Philadelphia, July-August, 1975, 3-10

This article focuses on the costs and benefits associated with achieving energy independence. The role of research and development, conservation, rationing, tariffs, and import quotas in helping achieve energy independence is discussed. The author concludes that while reducing U.S. energy dependence is prudent, complete self sufficiency is probably not worth the costs involved.

450 OVERVIEW OF THE ENERGY SHORTAGE SITUATION: HOW REAL IS IT AND WHAT ARE THE OPTIONS FOR THE 1970'S AND THE NECESSARY POLICY DECISIONS TO MAKE THEM VIABLE
David C. White
Business Economics, Sept., 1974, 46-57

The author traces the historical trend of energy consumption and then notes that we are moving from an historic pattern of decreasing energy costs to one of increasing costs in real terms. The domestic energy supply potential and the responsiveness of demand are reviewed. The conclusion drawn is that a demand-supply balance by the end of the decade will require both higher energy prices and major policy changes. The policy changes are outlined.

451 ENVIRONMENT, POWER, AND SOCIETY
Howard T. Odum
New York: Wiley, 1970

Uses circuit diagramming techniques from engineering with energy as a common unit of analysis to develop an holistic, systems perspective. The book shows how these techniques can be used to understand the similarities and interactions between widely divergent systems such as ecological, economic, political, and even religious. Numerous diagrams are included.

459 POLITICAL ECOLOGY: AN ACTIVIST'S READER ON ENERGY, LAND, FOOD, TECHNOLOGY, HEALTH, AND THE ECONOMICS AND POLITICS OF SOCIAL CHANGE
Alexander Cockburn and James Ridgeway

An unusual collection of essays on: energy, including articles by Anthony Sampson, Barry Commoner, Ralph Nader, and Amory Lovins; housing, land, and transport, including a description of how automobiles killed the city and an analysis setting the phenomenon of the sunbelt city into historical perspective; agriculture, including the topics of food as a political weapon, the green revolution, and ecosystem farming; health, including Illich's indictment of modern medicine and Epstein's critique of the political basis of cancer; technology, with Schumacher and his critics.

460 ENERGY BASIS FOR MAN AND NATURE
Howard T. and Elisabeth C. Odum
1976

A good introductory text showing the energy basis of natural and artificial systems through the use of simple, visual symbols. Part One of the book introduces energy principles and the flows of energy in our environment. Part Two discusses the energy bases of various types of societies throughout history. Part Three examines future possibilities through the relationships of energy and economics. It includes practical exercises for each chapter.

461 POST-SCARCITY ANARCHISM
Murray Bookchin
1971

An at-times polemical collection of essays ("Post-Scarcity Anarchism," "Ecology and Revolutionary Thought," "Towards a Liberatory Technology," "The Forms of Freedom," "Listen Marxists") advocating an ecologically sound, appropriate technology, politically decentralized society. It argues that an anarchist society is a pre-condition to sound ecological practices, and is particularly critical of Marxists and their rejection of the political relevance of ecological issues.

462 ANIMAL LIBERATION: A NEW ETHICS FOR OUR TREATMENT OF ANIMALS
Peter Singer
1975

This is a now classical, clearly-written book about the "tyranny of human over nonhuman animals." In making a comprehensive case for vegetarianism as morally and socially necessary, Singer demonstrates that our treatment of nonhuman animals is immoral and wasteful.

463 THE DOMINATION OF NATURE
William Leiss
1974

Leiss presents an erudite study of the history of the ideology of dominating nature and its implications for science and technology. He postulates that environmental issues are a symptom of an even deeper dilemma -- man's domination of his/her fellow human being. Science and technology are symptoms of the problem and not part of the solution.

464 ECONOMIC DEMOCRACY: THE CHALLENGE OF THE 1980'S
Martin Carnoy and Derek Shearer
1980

A realistic and detailed plan for fundamentally revising the American economy through schemes to shift investment from corporate domination to the public by, for example, attaining employee control over pension investment. Also, the book advocates reconstruction of economic decision making through democratic, worker-controlled production. It is replete with examples including many insights into the Swedish experiment. Proposals rely heavily on government intervention.

465 BIG TWO-HEARTED RIVER
Ernest Hemingway
1925

Nick Adams, Hemingway's semi-autobiographical hero, alights from a train at a small town in the north woods of the midwest to find the whole town in charred ruins. Its "burned out" condition symbolizes Nick's own similar condition from a traumatic phase in his own life. Nick's "uphill" hike toward the river he has known brings him at day's end to a perfect homelike camping spot. His reverence for his surroundings and his catch (which he releases) suggests powerfully that for man to be re-created by nature he must take great care not to misuse the gifts of the land. Man "burns out" both himself and his environment; nature recreates.

466 ENERGY AND THE WAY WE LIVE
Melvin Kranzberg, Timothy A. Hall and
Jane L. Scheiber
1980

This collection of essays on energy topics ranging from oil to solar as sources, and from past to future as lessons, includes a section particularly relevant for studies in humanities: "Energy and Values." It is followed by Part Four: Alternative Scenarios for Our Energy Future," which provides analyses of the prospects for coal, oil, undersea oil, nuclear, solar, geothermal, synthetic, and conservation as future energy sources. The emphasis on values and ethics in energy matters makes the book a suitable source for students of other than the hard sciences. Essays are short, for the most part, and well adaptable comparison/contrast, cause-and-effect, or classification papers. Most of the authors have names well known in science and/or politics.

467 THE WASTE LAND
T.S. Eliot
1922

This poem, replete with allusions to classical and primitive myth, has become the literary "watershed" for modern writers decrying the barrenness of our western cultural "desert." The narrative persona, Teiresias, moves from a dry, barren condition through vignettes of ancient and modern life in noisy, smelly cities (London's "brown fog," for one) to a condition of faint hope, fertility, and moisture. Although the poem does not discourse on "energy" per se, its paralleling of physical and spiritual barrenness moving toward the possibility of revitalization makes it a vehicle for discussing the inescapable link between man's spiritual and environmental conditions. Beyond despair, the "arid plain behind him" the persona progresses toward water, suggesting spiritual baptism after the rigors of fire.

468 ENERGY WE CAN LIVE WITH
Daniel Wallace, Editor
Rodale Press, 1976

Part I discusses the more obvious alternate energy sources -- solar, methane gas, wind power -- and discusses advantages of each method. Part II, Energy and Agriculture, gives suggestions for making agriculture a valuable energy asset rather than the biggest and most wasteful consumer.

469 GASOHOL: BRIGHT HOPE ON THE ENERGY HORIZON?
Robert Bahr
Kiwanis Magazine, 65(8), Sept., 1980, 18-21, 46, 49

Contending that gasohol could increase fuel stocks greatly, the author raises several questions about its use: Should we sacrifice food for energy? How will the problem of soil erosion created by the extensive use of grain be resolved? What can be done to focus on other biomasses which are cheaper and possibly less valuable than grain? The author concludes that a carefully designed alcohol fuel program based on forest products could become an important source of fuel as answers to the above questions.

470 ENERGY POLICY EVALUATION
Dilip R. Limaye
D.C. Heath Company, 1974

Limaye describes some of the applications of modeling and simulation approaches to energy policy evaluation. The essays treat topics ranging from operational issues, such as predicting daily gas demand to tactical and strategic issues involving the deregulation of natural gas prices. Though written in 1974, much of the information is still pertinent.

471 ENERGY: WHAT OTHER NATIONS ARE DOING
Newsweek, Inc.
Newsweek Magazine, Feb. 17, 1975

This article examines how five American allies -- France, West Germany, Britain, Italy, and Japan -- intend to cope with their future energy problems. In France, coal mines are being reopened. Germany is relying on the law of supply and demand to cut fuel consumption. After resorting to voluntary measures to curb energy, Britain instituted an energy plan that places restrictions on heating and speed limits. Italy has also put into effect a plan to cut over-all consumption by 7 percent, and efforts are under way to study greater use of geothermal energy.

472 NUCLEAR POWER AND EDUCATIONAL RESPONSIBILITIES
Emma M. Cappelluzzo
Phi Delta Kappan, Sept., 1979, 47-49

Ms. Cappelluzzo discusses the school's role in teaching the applied sciences as well as the new terminology associated with this area. In short, the article stresses the role of educational institutions in educating the public and in disseminating knowledge about nuclear power in language that can be clearly understood.

473 HOW MUCH DO YOU KNOW ABOUT ENERGY
Keith Kline
Sierra, March/April, 1977

This article is a twenty-three item multiple choice quiz (with answers) and is designed to acquaint individuals with basic energy facts. Questions ranging from the amount of energy consumed per year to available energy sources are included.

474 THE LAST TRAFFIC JAM
Stewart Udall
Atlantic Monthly, 1972

The author advocates establishing economic growth limits that would permit the automobile industry and other agencies such as oil companies to achieve economic stability while conserving and preserving the environment. According to the author, the key to conservation lies in the formulation of "saner" policies.

475 THE AMERICAN ENERGY CONSUMER: A REPORT OF THE ENERGY POLICY PROJECT OF THE FORD FOUNDATION
Dorothy K. Newman and Dawn Day
Ballinger Publishing Company, 1977

This book begins by giving a brief history of energy use in the U.S. and proceeds to examine how six widely different households use energy. Chapters 3 and 4 present data on those items and factors that contribute to greater energy consumption in homes and in transportation. Chapters 5 and 6 examine the amount of energy used in terms of cost. In Chapter 7, the energy situation in black households representative of diverse economic levels is examined and contrasted with energy use in white households with similar yearly incomes. Chapter 8 provides suggestions for curbing household energy consumption.

476 ENERGY THE CONTINUING CRISIS
Norman Metzger
New York: Thomas Y. Crowell Company, 1977

Divided into 11 chapters with a selected bibliography, this book examines the gap between energy supplies and needs. Various energy options -- fission, including breeder reactors; fusion, solar, and geothermal power are addressed. Each energy option discussed is addressed in terms of its impact on the demographic and environmental factors, its cost, and its potential for success. Other areas treated include OPEC, the building industry, electrical utilities, and the crisis in resources other than energy, i.e., water.

477 THE NIGHTMARE LIFE WITHOUT FUEL
Isaac Asimov
Time Magazine, 1977

Presents a dismal future of "life without fuel" in 1997. Elegant and vivid descriptions, coupled with irony are the major stylistic devices that add to this selection. As Asimov views life in 1997, bicycles will replace automobiles and mass transportation as energy will be conserved for agriculture. In short, the author predicts that life will be reminiscent of the 1800's when vast machine industries and technology were at a minimum.

478 SUNLIGHT AND MOONLIGHT
George Chapman
New Republic Magazine, Oct. 27, 1979

Chapman develops the thesis that although solar has a definite future, its potential is somewhat limited. Other items discussed include sanctions imposed by the federal government, defense and aerospace corporations who are big recipients of solar money, and utility companies who regard solar as a threat.

479 THE PASSING OF NIGHT
Barry Lopez
Audubon Magazine, July, 1975

This work uses informal diction to illustrate the adverse impact of artificial light upon nature's beauty. The article is rich in similes and connotative words. (This essay would serve as a good work to teach in conjunction with Wordsworth's poems on nature.)

480 THE NEXT TEN YEARS: CHOICES AND LIMITS
Ford Foundation
Exploring Energy Choices, 1974

This article examines the causes of the energy crisis and comments on immediate choices the U.S. has in responding to pressing difficulties. Limits and consequences of options are discussed. Employment and economic growth trends are also examined as they impact on future energy consumption.

481 OIL FRAUD
Robert Sherrill
Fort Lauderdale News/Sun-Sentinel, Oct. 14, 1979

Contending that the U.S. has had periodic energy crises since 1920, the author examines the legitimacy of the latest crisis and concludes that it, like previous emergencies, was engineered by the American petroleum industry in an attempt to increase fuel costs.

482 CARTER SPEEDS UP THE NUKES
Time Magazine, March 27, 1978, 57

Steps taken by President Carter to speed up the development of nuclear plants are discussed. These steps include the administration's sending a bill to Congress to increase construction of nuclear plants, the President's formation of an interagency task force to recommend a national policy for the disposal of nuclear waste, and the President's adverse reactions to the construction of a fast-breeder reactor at Clinch River, Tennessee.

483 REMOVING THE RUBBISH
John Passmore; Burr and Goldinger, editors
Philosophy and Contemporary Issues
New York: Macmillan, 1980

The intellectual "rubbish" which the author says needs to be removed in order to think responsibly about ecology includes (1) mystical philosophy which espouses the totalistic wholeness of all things, (2) a reversion to a primitive perception of nature as sacred, and (3) the anthropocentric hubris associated with the Judaeo/Christian tradition. No new ethic is needed, he says; rather, adherence to the better features of Western liberal morality will suffice: the restraint of greed, the overcoming of shortsightedness, and the inventiveness and flexibility of social traditions which promote freedom of thought, ingenuity, and action.

484 THE TROJAN HORSE: A RADICAL LOOK AT FOREIGN AID
Steve Weissman, editor
San Francisco: Ramparts Press, 1974

Written by members of the radical Pacific Studies Center in California, these articles illustrate the central thesis that U.S. foreign aid is not merely a humanitarian enterprise; rather, it represents covert extensions of American military, political, and economic influence and geopolitical advantage among poor nations. While not denying that foreign aid does do some human good, the authors aim at expose. They offer no alternative solutions for assisting developing nations.

485 TOOLS FOR CONVIVIALITY
Ivan Illich
New York: Harper & Row, 1973

Modern man has become a slave to his "tools"--all rationally designed devices in the exclusive service of mass efficiency. Society can be reconstructed through the "convivialization" of tools--the reduction of systems, machines, industries, and institutions to a scale more compatible with personal choice and independence. Industrial growth and the acceleration of consumption portend ecological crisis. Mass delivery of human services (health, education, housing, etc.) under the monopolistic control of professional cadres destroys personal responsibility and freedom of choice and fosters mindless dependency.

486 THE HISTORICAL ROOTS OF OUR ECOLOGIC CRISIS
Lynn White, Jr.
Western Man and Environmental Ethics
Reading, Mass: Addison-Wesly Publishing Co.
1973

White argues that man's relationship to nature is largely governed by his perceptions of ultimate reality, religious reality in particular. The impending ecological crisis of the West has its roots in the anthropocentric and nature-domination motifs of Latin (western) Christianity. More technology is not the answer. A new nature mythos is needed --perhaps a modern equivalent of animism. White finds a promising theological model in the life and teachings of St. Francis of Assisi.

487 PERSON/PLANET: THE CREATIVE DISINTEGRATION OF INDUSTRIAL SOCIETY
Theodore Roszak
Garden City, New York: Anchor Press/Doubleday, 1978

Arguing that a new cultural ethos based on personal identity, self-fulfillment, and free expression is emerging, the author contends that this movement will have a corrosive effect on the structures and systems of urban/industrial societies. Such stirrings constitute a particular threat to bigness: global strategies, giant governments and corporations, and interlocking systems of bureaucracies. The author welcomes the resulting structural disintegration and insists that the timing of the revolution is ecologically propitious, in that it will help guard Earth from the depredations of the regime of bigness.

488 A THEOLOGY OF EARTH
Rene Dubos; Ian G. Barbour, editor
Western Man and Environmental Ethics
Reading, Mass.: Addison-Wesley, 1973

In reply to Lynn White (Abstract #486) the author cites themes in biblical literature and in church history which provide sanctions for the responsible use of nature. In Genesis, for example, man is instructed to "dress and keep the garden"; further, the sound agricultural practices and land management of the Benedictine monks illustrate "creative intervention"--not just romantic protection of untouched nature. The author advocates a modified anthropocentrism which puts man necessarily at the summit of creation, although still very much a part of it.

489 THE LAST CHANCE ENERGY BOOK
Owen Phillips
Baltimore, Md.: Johns Hopkins Press, 1979

This 142-page book is a lucid, nontechnical examination of the extent and nature of the present energy situation and the pros and cons of the major energy strategies open to us - on a personal as well as global level.

490 A SAND COUNTY ALMANAC
Aldo Leopold
New York: Oxford University Press, 1966

An eloquent statement of the conservation ethic with emphasis on the diseconomies and energy requirements associated with degrading and "artificializing" the natural environment.

491 THE ECONOMICS OF COMING SPACESHIP EARTH
Kenneth Boulding
The Environmental Handbook
New York: Ballentine Books, 1970

An eminent economist examines the implications of planned obsolescence, increasing GNP, dwindling resources, and increasing pollution on the present and future condition of the Earth. He argues for the establishment of an homeostatic economy characterized by reduction in consumption of material goods and an increase in services such as pollution control and education. He posits that, although ethically we should protect the Earth and her resources for future generations, there is also a more pragmatic reason--a society which loses its positive image of the future and its identity with posterity loses its capacity to deal with present problems and soon falls apart.

492 INTRODUCTION TO APPROPRIATE TECHNOLOGY
R.J. Congdon, editor
Einmaus, Pa.: Rodale Press, 1977

A practical well-illustrated guide to development of technologies characterized by low capital costs, use of local materials, labor intensity, and use of renewable resources. Emphasis is on pedal, wind, and solar power.

493 MANKIND AT THE TURNING POINT
Mihajlo Mesasovic and Eduard Pestel
E.P. Dutton & Co., Inc., 1974

In this Second Report to the Club of Rome, the authors explore the consequences of dimunition of food, energy sources, and raw materials, globally and differentially in ten regions of the world. The treatise identified conditions necessary to avoid catastrophy and posit strategies to meet such conditions.

494 LIMITS TO GROWTH
Donella Meadows, Dennis Meadows, Jorgan Randers, William W. Behrens
Universe Books, 1972

With the help of a computer model, the authors analyze combined implications of population increase, agricultural production, nonrenewable resource depletion, industrial output, and pollution generation. Using the model, the research team predicts global conditions in the year 2100 under several sets of assumptions (varying degrees of pollution control, population control, resource availability, capital availability, etc.). This is the First Report to the Club of Rome, a group organized to investigate the problems facing mankind.

495 THE HUMAN FUTURE REVISITED
Harrison Brown
New York: W.W. Norton & Co., 1978

An examination of the patterns of resource use in the rich and poor nations. Brown examines the future in terms of population growth, changing technologies, weaponry, environment, and diminishing resources: food energy, minerals, etc. Included are anticipated problems, ways (positive and otherwise) of meeting them, and results to be expected from each approach.

496 END OF AFFLUENCE
Paul R. Ehrlich and Anne H. Ehrlich
New York: Ballentine, 1974

A lucid examination of the implications of anticipated scarcities of energy related resources. The authors list harbingers of economic and environmental collapse and describe how the individual can prepare to cope with future problems.

497 SMALL IS BEAUTIFUL
E.F. Schumacher
New York: Harper & Row, 1975

A thoughtful discussion of the dehumanizing aspects of large-scale industry and an argument for the establishment of economic systems and technologies appropriate for the preservation of existing cultural values and patterns. Emphasis is on decentralization and labor intensive (rather than capital and energy intensive) enterprises.

498 ENVIRONMENTAL QUALITY BY DESIGN: SOUTH FLORIDA
Albert Veri, William Jenna and Dorothy Bergomaschi
Coral Gables, FL: University of Miami Press, 1975

A beautifully-illustrated overview of the Southern Florida region, and its natural and social systems. Emphasis is on energy free services provided by natural systems and how land use planning can reduce energy requirements of the built environment.

499 GEORGESCU-ROEGEN: ENTROPY THE MEASURE OF ECONOMIC MAN
Nicholas Wade
Sicence, Oct. 31, 1975

A discussion of Georgescu-Roegen's economic theory which challenges the conventional assumption that economics is a closed circular process, an endless pendulum moving between production and consumption, in which the exhaustibility of natural resources is ignored. In this theory, Georgescu-Roegen applies the Second Law of Thermodynamics (energy is not cyclic; whenever energy is transferred, a large measure of it is dissipated, never to be recovered). Entropy is a measure of this dissipated energy. The only way mankind can ensure that some capital energy goods (unrenewable resources -- e.g., fossil fuels) are left for future generations is to establish a global economy based on the flow of renewable energy (e.g., solar).

500 ENERGY AND LAND CONSTRAINTS IN FOOD PROTEIN PRODUCTION
D. Pimentel, W. Dritschilo, J. Krummel, and J. Kutzman
Science, Nov. 21, 1975

The authors discuss the dependency of food supplies upon energy resources. Modern high yield agriculture requires fossil fuel-dependent fertilizers, pesticides, and mechanization. With the dimunition of these resources coupled with rising population, desertification of the Earth, and the recent downturn of the world's fish catch, mankind faces increasing food shortages. An analysis of the energetics of production of energy-efficient vegetable protein versus animal protein is included.

501 THE TITANIC EFFECT
Kenneth Watt
Stamford, Conn.: Sinauer Associates, Inc., 1974

A well-documented challenge of conventional wisdom. Watt applies ecological principles and techniques of systems analysis as he explores the implications of exponential growth of populations, resource consumption, and capital requirements. Included are strategies for implementation of the social, economic, and political changes needed to ward off future disaster.

502 ONLY ONE EARTH
Barbara Ward and Rene Dubos
New York: W.W. Norton & Co., 1972

This book was written to provide factual background for the United Nations Conference on the Human Environment (Stockholm, 1972). It is a sophisticated analysis of how differing values among nations and individuals account for disparate asessments of environmental dangers and differing approaches to allocation of resources, economic growth, urban development, pollution control, and land use.

503 THE POVERTY OF POWER
Barry Commoner
New York: Bantam Books, 1976

Using illustrations understandable to the non-scientist, Commoner elucidates the Laws of Thermodynamics in this analysis of our energy dilemma. The focus is on the environmental impacts of exploitation of the various energy resources. Included is a critique of the efficiencies of major energy-consuming industries and of the increasing emphasis on energy and capital-intensive industry at the expense of labor-intensive, energy-conservative practices.

504 CHANGE IN ALASKA: PEOPLE, PETROLEUM, AND POLITICS
George W. Rogers, Editor
1970

This book is a collection of papers read at the 20th Alaska Science Conference at the University of Alaska. The papers deal with the social, moral, and economic changes brought on by the presence of petroleum in Alaska.

505 ACHIEVING ENERGY INDEPENDENCE
Committee for Economic Development
Dec., 1974

This work presents the idea that to achieve energy independence, the nation must conserve energy as a sure way of reducing the country's dependence on imports. Driving less at lower speeds and insulating homes are two simple measures of saving energy. Other helpful suggestions appear in this report.

506 SOME SOCIETAL IMPACTS OF ALTERNATIVE ENERGY POLICIES
Selwyn Enzer
June, 1975

The author offers seven possibilities of how the nation can reduce the consumptions of petroleum and gas without creating social and economic hardships: (1) Eliminate Waste, (2) Develop new energy sources, (3) Substitute more plentiful fuels for scarce fuels, (4) Increase the use of more plentiful energy forms, (5) Shift to less energy-intensive products and processes, (6) Reduce energy-consuming activities, (7) Improve efficiency of energy-consuming activities.

507 THE ENERGY INDEPENDENCE AUTHORITY
Francis X. Murray, Editor
March, 1976

This is a seminar report on the feasibility of giving the Energy Independence Authority the power to determine our energy policy and strategy. Opponents of the proposal feel that such a program would necessarily encourage more government involvement. Supporters of the Energy Independence Authority feel that this program would employ new technologies and would cause little if any disruption in the private sector.

508 HOW CONSUMERS FEEL ABOUT ENERGY: ATTITUDES AND BEHAVIOR DURING THE WINTER AND SPRING 1976-77
Jeffrey S. Milstein; S. Warkow, Editor
Energy Policy in the United States, 1978

Milstein feels that Americans are poorly informed about the difficult energy problem. For example, the average citizen is confused by proposals to solve the problem by raising fuel prices to the consumer. This is a rather penetrating comment on attitudes toward the energy crisis.

509 PUBLIC ACCEPTANCE OF ENERGY CONSERVATION
Marvin E. Olsen; S. Warkow, Editor
Energy Policy in the United States, 1978

The focus of this essay is that public leaders and government officials must encourage all citizens to think in terms of saving energy. The success of educating the public on the importance of energy conservation will depend upon the imaginative leadership of officials at all levels of the government.

510 SOCIAL IMPLICATIONS OF THE ENERGY CRISIS: ARE THERE ANY?
John P. Walter and Rene D. Zentner
S. Warkow, Editor
Energy Policy in the United States, 1978

This article states that the common behavior of most people associated with the energy crisis from 1973-77 did not change. In fact, during this period, energy consumption increased rather than declined. This behavior will not change until the public fully recognizes the limited supply of energy. If the behavior remains the same, the only choice left is to mandate conservation by law.

511 THE LAW AND ENERGY CONSERVATION
Grant P. Thompson; R. Burby, III and A. Bell, Editors
Energy and the Community, 1978

The American public is just beginning to think of what it must do to impose legal regulations upon builders for constructing energy conservation. Since energy cost will most likely climb in the future, our government must design stricter regulations to cope with this situation, a course many Americans will not welcome.

512 ENERGY CONSUMPTION IN AMERICAN HOUSEHOLDS
Eunice S. Grier; R. Burby, III and A. Bell, Editors
Energy and the Community, 1978

This article deals with the impact of the energy squeeze on low-income families. Since low-income families are just about as diverse in their lifestyle as other socio-economic groups, it is wrong to look upon them as a single entity. Their energy needs should be determined on individual bases.

513 ENERGY AND LOCAL GOVERNMENT: THE PRICE OF CRISIS
David MacKenna, et al
Arlington, TX: Institute for Local Government, University of Texas, July, 1975

In the wake of the energy crisis of 1974, this analysis shows the dependency of local government on inexpensive energy. The budgetary analysis is particularly useful as it demonstrates the many places that energy plays a role in urban governance. The monograph is only marred by turgid prose. It is therefore suggested for advanced courses.

514 SHUT DOWN: NUCLEAR POWER ON TRIAL
John Gofman and Ernest Sternglass
Summertown, TN: The Book Publishing Company, 1979

This book is, in reality, the testimony of the authors in Federal Court concerning radiation from local nuclear facilities on local citizens. It raises a host of questions concerning having such power plants near population centers. Thus it is a good balance, if a polemical one, to Garvey's Nuclear Power and Social Planning.

515 NUCLEAR POWER AND SOCIAL PLANNING: THE CITY OF THE SECOND SUN
Gerald Garvey
Lexington Books, 1977

Professor Garvey discusses the economic benefits of nuclear power as a prelude to a proposal that cities be centered at nuclear power sites. He discusses the costs and benefits in social and political terms. It is a utopian, but a well argued position. It should make for hot class discussion, particularly in juxtaposition with Shut Down.

516 ENERGY CONSERVATION IN HUMAN SETTLEMENTS
EKISTICS (Entire issue), 45(269), May, 1978

This issue of EKISTICS provides a comparative perspective. It includes an article on nuclear power plant sites and their social impact in New Zealand; however, the most useful piece may be the theoretical piece on energy and public opinion and values. It articulates, in a short space, the argument that a conservation ethic is needed and what that ethic would be.

517 ENERGY AND SOCIETY
Fred Cottrell
New York: McGraw Hill, 1955

This book provides a necessary historical perspective on the energy crisis by noting the relationship between social evolution and energy sources. As we reconsider low energy systems, it would be wise as well to note the social spillover these systems had in earlier societies. Cottrell is particularly objective as he is writing before any general awareness of the energy crisis.

518 USING LAND TO SAVE ENERGY
Corbin Harwood
Cambridge, MA: Ballinger Publishing Co.,1977

This book is a review of planning options and their legal supports for making cities more energy efficient. It contains examples, concepts, and suggestions for those interested in the use of zoning and other planning tools for implementation.

519 ENERGY CONSERVATION AND PUBLIC POLICY
John Sawhill, Editor
Englewood Cliffs, N.J: Prentice-Hall, 1979

This reader provides an overview of the impact of the energy crisis on the American economy. It focuses on possible solutions rather than repeating dire predictions. Chapter II is of special interest for those interested in intergovernmental relations because it discusses the federal role in helping states and local governments respond to the crisis.

520 ENERGY CONSERVATION IN CITIES
Langdon Crane
Foresight, Vol. 2, Y4Sci2:95/zzz, Dec.1978

This volume is the record of a workshop for the Committee on Science and Technology, U.S. House of Representatives. It deals with the social, demographic, architectural, and policy planning aspects of energy conservation. This publication is short and provocative.

521 ENERGY AND THE CITY
Sub-committee on the City, Committee on Banking, Finance, and Urban Affairs, U.S. House of Representatives
Y AB22/1:En2/8, Sept. 14-16, 1977

Many powerful urban interest groups are represented in this testimony: the National League of Cities, the Conference of Mayors, and the National Association of Regional Councils. A statement by the Mayor of Jacksonville is included. The publication also contains an interesting essay by David Rose on energy in the city. However, the heart of the volume is testimony.

522 ESTABLISHING AN ENERGY OFFICE: SEVEN COUNTY PROGRAMS
Don Spangler and Sue Guenther
National Association Counties,
Washington, D.C., June, 1979

This volume is useful because it is comparative. The structure of seven counties is described, including the organization in Hillsborough and Duval, FL. Generalizations are offered at the end concerning the creation of energy offices. The volume might provide good case-study material for student analysis on a final exam or paper.

523 LOCAL ENERGY POLICIES
Sub-committee on Energy and Power, Committee on Interstate or Foreign Commerce; Y4.In 8/4:95-135, May,June 1978

This set of hearings offers a useful display of the several attempts to conserve energy at the local level. Included are representatives of Davis, Ca., Seattle, Wa., Springfield, Vt., Bridgeport, Tx., Clearwater and Dade County, Fl. The emphasis is on practical solutions that have worked locally with a minimum of intergovernmental influence.

524 A GUIDE TO REDUCING ENERGY USE BUDGET COSTS, VOL. I.
National Association of Counties,
National League of Cities, U.S.
Conference of Mayors
Department of Energy, HCP/U60565-01,UC-13

This document is the guidebook for most local governments as they set up energy conservation programs. There are chapters on administration, employee programs, vehicle fleets, building audits, and citizen participation. This volume is useful for examples and research, but tends to be more of an administrative piece than an analysis of political process.

525 A GUIDE TO REDUCING ENERGY USE BUDGET COSTS, VOL. II.
Sarah Osgood Brooks and Elizabeth Wood
National Association of Counties/U.S.
Conference of Mayors, Fall 1979

Volume Two of this handbook provides greater detail concerning building audits, and adds material regarding local government purchasing and resource recovery. Street lighting programs and employee transportation are considered as well. Solar energy information of use to local decision-makers is also noted.

526 MANAGING THE IMPACT OF THE ENERGY CRISES: THE ROLE OF THE LOCAL GOVERNMENT
Steve Hudson
Management Information Service,
International City Management Asso.,
12:2:1-17, February, 1980

This article is an introduction to the problems of energy implementation at the local level. It contains examples of problems, a critical evaluation of existing programs, and a discussion of funding and intergovernmental relations. The ICMA continues to watch the energy problem closely and has just completed a survey of local implementation which will soon supplement this introductory piece.

527 DECENTRALIZED ENERGY POLICIES
Ronald D. Brunner
Public Policy, 28:1:71-91, Winter 1980

This article discusses ways for the federal government to promote energy conservation programs in local areas, and looks into the political obstacles to full cooperation. The article also review the Davis, Ca., Springfield, Vt., and Seattle, Wa., cases. The author is critical as well as suggestive of policy solutions.

528 LEAVES OF GRASS
Walt Whitman
Signet Classic final edition 1892

Whitman's poems express the relationship of man to nature, man to man, and man to god. Nature to Whitman is at times a god, at times part of himself, at times a symbolic comfort as in "When Lilacs Last in the Dooryard Bloom'd." He feels himself in nature and nature in himself. Some poems that will especially interest the reader concerned about energy and the environment include "Song of Myself," "Out of the Cradle Endlessly Rocking," "As I Ebb'd with the Ocean of Life," "There Was a Child Went Forth," "The Sleepers," and "To the Sun-Set Breeze."

529 AN ENEMY OF THE PEOPLE
Henrik Ibsen, 1883

Ibsen presents the moral dilemma of a scientist, Dr. Stockmann, whose revelation that the town's baths are polluted will condemn his townspeople and family to financial ruin. Stockmann clings to integrity, he and his family are ostracized, and his imagined adulation by the town turns to bitter rejection. The obtuse "establishment" against which Stockmann fights (including his own brother and the "free" press) bears resemblance to any group fearing its own denigration. The play illustrates Ibsen's belief that the majority causes society itself to stagnate.

530 BOOM OR BUST: ENERGY DEVELOPMENT IN THE WESTERN UNITED STATES
John S. Gilmore; R. J. Burby, III and
A. F. Bell, Editors
Energy and the Community,
Cambridge, MA: Ballinger Publishing, 1978

This article deals with some of the problems brought on by the building of power plants in isolated rural areas in the Rocky Mountains-Great Plain region. One major problem was the rapid growth in population which small towns could not absorb. Along with the rapid growth and other negative factors, an increase in crime rate appeared. The author offers suggestions to cope with the unsavory side of population growth resulting from the development of large energy power plants.

531 ENERGY EXAMPLES ILLUSTRATING THE CONCEPTS OF MARGINAL COST AND SUPPLY
R. Brandolini, Valencia Community College
Business and Economics Task Force Study
Paper. Available from Governor's Energy
Office. 1980. 5 pp.

This set of lecture notes emphasizes the importance of the marginal cost concept and its use in economic decision making. Three examples show the relationship between a marginal cost curve and a supply curve when oil and gas prices are regulated. Comparisons are made between pricing decisions based on average costs and those based on marginal costs. Several references are given.

532 THE IMPACTS OF A NUCLEAR POWER PLANT ON A LOCAL COMMUNITY: PROBLEMS IN ENERGY FACILITY DEVELOPMENT
John H. Cumberland; R. J. Burby, III and
A. F. Bell, Editors
Energy and the Community,
Cambridge, MA: Ballinger Publishing,1978.

This essay is concerned with one major problem: to explore opportunities for minimizing future damage to communities in which large nuclear energy facilities are located.

533 THE TRANSITIONAL STORM
New York: Edison Electric Institute, 1977

This book, the first volume in a series, depicts the energy crisis as a "transitional storm," with one aspect involving fossil fuels and another, uranium. Through a collection of articles, the editors discuss the impact of the energy crisis on the economy and jobs, and provide suggestions on which solutions can be built. The editors also contend that the U.S. is not short of energy, but lacks the technological knowledge to convert existing fuel sources into working energy.

534 CONSERVATION AND THE TRANSITION TO ALTERNATIVE FUELS
Lester B. Lave; Ragaei El Mallakh and
Dorothea H. El Mallakh, Editors.
Energy Options and Conservation, Boulder,
Colorado: The International Research and
Economic Development, 1978

This paper, based on the Economic Study Panel of the Inexhaustible Resources Study and submitted to the Energy Resources and Development Administration, traces the historical growth and role of conservation in the United States. It also gives reasons why conservation is necessary. Finally, it outlines steps, along with possible risks, of dealing with and overcoming the energy shortage.

535 SAVING ENERGY IN BUILDINGS
Michael Sizemore; R.J. Burby, III and A.
F. Bell, Editors.
Energy and the Community, Cambridge, Mass.:
Ballinger Publishing Company, 1978

The potential for saving energy in the future is promising. In fact, if one could reduce energy consumption in future buildings by 60%, the energy saved would be as large as the expected amount of energy obtained from nuclear power in 1990. Because of the number of variables that must be considered, energy planning is difficult. Architects and planners must understand and work with such variables as cultural attitudes, mechanical equipment, and the activity of the occupants.

536 ENERGY AND CULTURE

Benjamin L. Gorman, University of Florida
Political Science and Sociology Task Force,
Study paper available from Governor's
Energy Office. 4 pp.

This course module for 1-3 class periods develops the theory that energy use is a fundamental determinant of cultural patterns. The major paradigms of thought in the social sciences have not emphasized the energy-driven factors, but, nevertheless, energy factors can be shown to be strongly assumed in the theories of such divergent thinkers as Karl Marx, Marshall McLuhan, Thorstein Veblen, and Gordon Childe. Anthropologist Leslie White is cited and a study by Kluckhohn, Strodtbeck, and associates is examined in some detail. Four cultural heritages in the American Southwest are compared - Anglo, Mexican, Morman, and Navajo - in their orientation on man's relationship to nature. Bibliography provided.

537 DECADE OF SCARCITY

Wall Street Journal, December 19, 1979

This article is the first of two articles speculating on the economic outlook for the 1980's. The views of several experts on energy are surveyed regarding the energy problem facing the U.S. and other Western countries in the coming decade. Gary Fromm, director of the Center for Economic Policy of SRI International, predicts, "Overall, it is likely to be a period with slower growth and higher inflation than the preceeding three decades." Views of other experts tend to confirm and embellish those expressed by Fromm. The consensus sees the U.S. production of oil and gas predicted to remain steady, while nuclear power and coal production lag. No quick solution is forecasted.

538 PROSPECTS FOR ENERGY FROM NUCLEAR FUSION ARE IMPROVING AGAIN

Arlen J. Large
Wall Street Journal, August 28, 1979

Some researchers in nuclear power are so optimistic about harnessing fusion they are impatient with the government's 40-year timetable for research on producing electricity on a commercial basis from fusion. U.S. funds account for just one-third of a world wide effort. The world's wealthy governments are also cooperating in this research effort. A discussion of using a fusion reactor for making electricity commercially is included in the article.

539 SHALE OIL IS BRACED FOR A BIG ROLE

Peter Nulty
Fortune, September 24, 1979, 43-48

Shale oil may be closer to actual production than other unconventional resources and Occidental Shale Oil, Inc. (Oxy) expects to be able to produce it in significant quantities by the mid-1980's. The process used by Oxy to extract shale oil from rock by heating it in underground retorts is explained. This is one of a series of articles in Fortune on energy possibilities of the future.

540 RESERVES: THE NEW MATH

Newsweek, June 27, 1977, 71-73

Geologists say the question of energy sources is not whether there is gas or oil for future generations, but whether it is recoverable and, if so, at what price. New deposits are harder to recover because they are deeper and in harsher environments. Proven domestic oil reserves totaled 4.8 years' worth in 1977 and domestic gas reserves equaled 10.8 years' supply. World reserves were 30 years' worth of oil and 50 years' worth of gas. Even so, geologists believe half the world's remaining oil and gas resources is yet to be discovered. Five bar graphs illustrate the thesis of the article.

541 RENEWABLE ENERGY: ASKING TOO MUCH OF THE SUN?

The Economist, September 2, 1978, 74-76

The article examines the feasibility of harnessing the sun, wind, and ocean for renewable energy. Britain is the pioneer in wave research with Sir Christopher Cockerell's train of rafts that follow waves and absorb their power by hydraulic pumps at hinges between the rafts. Norway and Japan are also working on waves, but so far renewable energy is technically and/or economically risky and attractive only on a limited scale in few places. Solar energy research is making the most rapid progress.

542 THE KEMENY REPORT: WHAT NEXT FOR NUCLEAR POWER
U.S. News & World Report, November 12, 1979, 33-35

This article, written shortly after the nuclear reactor accident at Three Mile Island in Pennsylvania, assesses how the incident may influence the future of nuclear power as an energy source.

543 ATOM'S FUTURE IN EUROPE -- LESS CLOUDED
U.S. News & World Report, November 12, 1979, 36

This is a report on how nuclear policies were faring in European countries when anti-nuclear forces were gaining ground in the U.S. shortly after the Three Mile Island accident in Pennsylvania. Energy-short nations throughout the world believe nuclear power plants are a necessity.

544 MEXICO'S MACHO MOOD
Time, October 8, 1979, 50-54, 59

This cover story describes a new relationship image developing between the U.S. and Mexico due to the numerous petroleum deposits discovered in Mexico during the 1970's. Mexico's President Lopez Portillo has informed Washington that Mexico's reponse to America's energy needs will be dictated by is country's special interests and by resolution of nagging issues between the two countries.

545 BIOMASS: THE SELF-REPLACING ENERGY RESOURCE
Gene Bylinsky
Fortune, September 24, 1979, 78-79, 81

Biomass from our natural surroundings could plausibly meet 15% of U.S. energy needs by 2000 A.D. Organic matter such as garbage, seaweed, and waste wood can be used as feedstock for conversion into gas, oil, or alcohol. The author concludes that wood holds the greatest promise.

546 THE ROUGH ROAD TO MAKING OIL AND GAS FROM COAL
Alexander Stuart
Fortune, September 24, 1979, 51-64

Gasification and liquification of coal is discussed and a history of the process pioneered by the Germans before World War II is reported. Rising costs in developing technology have discouraged investors, but there is strong interest in producing methanol for auto fuel.

547 HOPES FOR USING MORE 'HEAVY OIL' FADE AS AIR-QUALITY CONTROLS DETER PRODUCERS
Hal Lancaster
The Wall Street Journal, November, 24, 1979

After President Carter decontrolled the price of heavy crude oil in July 1979, the Californians who have the world's largest reserves of heavy crude oil shouted "Bonanza!" However, the anticipated growth of heavy-oil production and refining in California may be slowed by the state's stringent environmental controls.

548 EXPLORATION DRIVE: IN WEST, A LONG STRIP OF LAND STIRS HOPES AMONG OIL, GAS MEN
William E. Blundell
The Wall Street Journal, August 27, 1979

The article discusses the oil finds in Evanston, Wyoming in the late 1970's and the Overthrust Best, a complex geological feature winding from Alaska down through Arizona.

549 AFTER THE SECOND SHOCK: PRAGMATIC ENERGY STRATEGIES
Robert Stobaugh and Daniel Yergin
Foreign Affairs, Random House, Spring, 1979, 836-871

This article reflects main conclusions of the Energy Future Report and is based on the six-year research program preceeding the study. It compares the effects on the U.S. energy scene due to the 1979 upheaval in Iran with the effects caused by the embargo of 1973-74. The insecurity that results from the U.S. depending to such a degree on the Middle Eastern producers in emphasized.

550 GOING TO THE WELL: OIL GIANTS MAINLY SEEK EXISTING OIL PROPERTIES AS OUTLETS FOR EARNINGS
Paul Blustein
The Wall Street Journal, April 9, 1980

Oil companies are often critized for investing a large percentage of their profits in areas such as existing oil properties rather than in exploration and fuel research. Reasons given for choosing other investments are: tough environmental regulations; shortages of skilled manpower and drilling equipment; and overseas, the nationalization of much of their assets; plus the rising cost of drilling. Investment in alternative energy projects has never been attractive enough to encourage this type of venture. since research in synfuels, gas and tar sands requires enormous amounts of capital.

551 ENERGY BASIS FOR THE FUTURE
Elisabeth C. Odum
General Survey Course Study Paper, 1980
Available from Governor's Energy Office

This is a unit on energy that can be used as a supplement in courses on many subjects. Basic concepts of net energy and energy flow through systems are presented. The unit objective is to help students understand their social, biological and physical environment. The author deals with predictions for a lower energy, no-growth society. Illustrations and diagrams are included which can be made into slides or transparencies. References.

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